



Search Report

EIC 1700

STIC Database Tracking Number: 233816

To: JOHN MAPLES
Location: REM-6C89
Art Unit: 1745
Monday, August 13, 2007

Case Serial Number: 10/825437

From: USHA SHRESTHA
Location: EIC1700
REM-4B28 / REM-4B31
Phone: (571)272-3519

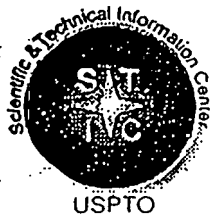
usha.shrestha@uspto.gov

Search Notes

Examiner MAPLES:

Please see the search results, feel free to contact me if you have any questions or if you like to refine the search query. Thank you for using STIC services!

Regards,
Usha



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact *the EIC searcher* or *contact:*

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

➤ I am an examiner in Workgroup: Example: 1713

➤ Relevant prior art found, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art *not* found:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28

Terrel Morris
TERREL MORRIS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700
8/9/07
Rush

Access DB# 233816

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: JOHN MAPLES Examiner #: 62294 Date: 8/9/07
Art Unit: 1745 Phone Number 301-21287 Serial Number: 10/825,437 + 11/432,402
Mail Box and Bldg/Room Location: REM-6C09 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: NON AQUEOUS ELECTROLYTE SECONDARY BATTERY

Inventors (please provide full names): Shinsuke Matsuno, Kashiwa-shi (JP);
Tatsuoki Kohno, Tokyo (JP); Takao
Sawa, Yokohama-shi (JP); Norio
Takami, Yokohama-shi (JP)

Earliest Priority Filing Date: 4/17/03

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

1. A negative electrode active material
containing an intermetallic compound having a long
period order along each of at least two crystal axes
and represented by formula (1) given below:



where y and z fall within the ranges of
 $0.3 \leq y \leq 1.5$ and $1.5 \leq z \leq 3$, respectively, Ln denotes
at least one element having an atomic radius in crystal
in a range of 1.6×10^{-10} to 2.2×10^{-10} m, M1 denotes
at least one element selected from the group consisting
of Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn and Nb, and M2
denotes at least one element selected from the group
consisting of P, Si, Ge, Sn and Sb.

2. The negative electrode active material
according to claim 1, wherein Ln denotes at least one
element selected from the group consisting of La, Ce,
Pr, Nd, Pm, Sm, Mg, Ca, Sr, Ba, Y, Zr and Hf.

Also:
PLEASE SEARCH FOR
SPECIFIC FORMULA:
 CeNiSi_2

AND FOR LATTICE
CONSTANT OF CRYSTAL
AXIS "a" AND FOR SIZE OF
TWO CRYSTAL AXES

STAFF USE ONLY

Type of Search

Vendors and cost where applicable



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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BIB DATA SHEET

CONFIRMATION NO. 8012

SERIAL NUMBER 10/825,437	FILING or 371(c) DATE 04/16/2004 RULE	CLASS 429	GROUP ART UNIT 1745	ATTORNEY DOCKET NO. 252020US2SRD		
APPLICANTS Shinsuke Matsuno, Kashiwa-shi, JAPAN; Tatsuoki Kohno, Tokyo, JAPAN; Takao Sawa, Yokohama-shi, JAPAN; Norio Takami, Yokohama-shi, JAPAN; ** CONTINUING DATA ***** ** FOREIGN APPLICATIONS ***** JAPAN 2003-113190 04/17/2003 JAPAN 2003-336246 09/26/2003 ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 06/24/2004						
Foreign Priority claimed <input type="checkbox"/> Yes <input type="checkbox"/> No 35 USC 119(a-d) conditions met <input type="checkbox"/> Yes <input type="checkbox"/> No Verified and Acknowledged <u>Examiner's Signature</u>		<input type="checkbox"/> Met after Allowance Initials	STATE OR COUNTRY JAPAN	SHEETS DRAWINGS 6	TOTAL CLAIMS 17	INDEPENDENT CLAIMS 3
ADDRESS OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314 UNITED STATES						
TITLE Nonaqueous electrolyte secondary battery						
FILING FEE RECEIVED 900	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit			

ABSTRACT OF THE DISCLOSURE

The present invention provides a nonaqueous electrolyte secondary battery including a positive electrode, a negative electrode and a nonaqueous electrolyte. The negative electrode contains an alloy
5 having a CeNiSi_2 type crystal structure.

WHAT IS CLAIMED IS:

1. A nonaqueous electrolyte secondary battery comprising:

a positive electrode;

5 a negative electrode containing an alloy having a CeNiSi₂ type crystal structure; and

a nonaqueous electrolyte.

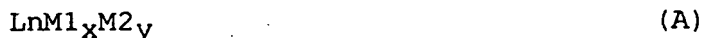
2. The nonaqueous electrolyte secondary battery according to claim 1, wherein a lattice constant of
10 crystal axis "a" of the CeNiSi₂ type crystal structure falls within a range of 3.5Å to 5.5Å.

3. The nonaqueous electrolyte secondary battery according to claim 2, wherein said lattice constant falls within a range of 4Å to 5Å.

15 4. The nonaqueous electrolyte secondary battery according to claim 1, wherein the alloy contains at least one kind of element selected from the group consisting of P, Si, Ge, Sn and Sb.

5. The nonaqueous electrolyte secondary battery
20 according to claim 4, wherein the alloy further contains at least one kind of element having an atomic radius falling within a range of 1.6×10^{-10} m to 2.2×10^{-10} m.

6. The nonaqueous electrolyte secondary battery
25 according to claim 1, wherein the alloy has a composition represented by formula (A) given below:



where Ln denotes at least one kind of element selected from the elements having an atomic radius falling within a range of 1.6×10^{-10} m to 2.2×10^{-10} m, M1 is at least one element selected from the group consisting of Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, and Nb, M2 is at least one element selected from the group consisting of P, Si, Ge, Sn and Sb, and x and y satisfy the conditions of $0.5 \leq x \leq 1.5$ and $1.5 \leq y \leq 3.5$.

10 7. The nonaqueous electrolyte secondary battery according to claim 6, wherein the element Ln is at least one element selected from the group consisting of La, Ce, Pr, Nd, Pm, Sm, Mg, Ca, Sr, Ba, Y, Zr and Hf.

15 8. The nonaqueous electrolyte secondary battery according to claim 6, wherein the atomic ratio x satisfies $0.6 \leq x \leq 1.3$.

9. The nonaqueous electrolyte secondary battery according to claim 6, wherein the atomic ratio y satisfies $1.7 \leq y \leq 2.5$.

20 10. The nonaqueous electrolyte secondary battery according to claim 1, wherein the negative electrode satisfies formula (B) given below:

$$0.95 \geq (w/d)/\rho \geq 0.55 \quad (B)$$

25 where ρ denotes a true density (g/cm^3) of the alloy, d denotes a thickness (μm) of the negative electrode, and w denotes a weight per unit area (g/m^2) of the negative electrode.

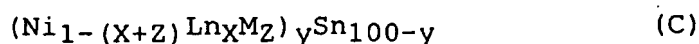
11. The nonaqueous electrolyte secondary battery according to claim 1, wherein the alloy is a single phase alloy or a polyphase alloy.

12. A nonaqueous electrolyte secondary battery
5 comprising:
a positive electrode;
a negative electrode containing an alloy having a TiNiSi type crystal structure; and
a nonaqueous electrolyte.

10 13. The nonaqueous electrolyte secondary battery according to claim 12, wherein a lattice constant of crystal axis b of the TiNiSi type crystal structure falls within a range of 4Å to 5.5Å.

14. The nonaqueous electrolyte secondary battery
15 according to claim 12, wherein the alloy contains Sn.

15. The nonaqueous electrolyte secondary battery according to claim 12, wherein the alloy has a composition represented by formula (C) given below:



20 where Ln denotes at least one kind of element selected from the elements having an atomic radius falling within a range of 1.6×10^{-10} m to 2.2×10^{-10} m, M is at least one element selected from the group consisting of Ti, V, Co, Fe and Nb, and x, y and z satisfy the conditions of $0.4 \leq x + z \leq 0.7$,
25 $40 \leq y \leq 80$ and $0 \leq z \leq 0.2$.

16. A nonaqueous electrolyte secondary battery

comprising:

a positive electrode;

a negative electrode containing an alloy having a
ZrBeSi type crystal structure; and

5 a nonaqueous electrolyte.

17. The nonaqueous electrolyte secondary battery
according to claim 16, wherein a lattice constant of
crystal axis "a" of the ZrBeSi type crystal structure
falls within a range of 4Å to 5.5Å.

=> d que 152

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L3      1 SEA FILE=REGISTRY ABB=ON  PLU=ON  CENISI2/MF
L4      69943 SEA FILE=REGISTRY ABB=ON  PLU=ON  ((LA OR CE OR PR OR ND
        OR PM OR SM OR MG OR CA OR SR OR BA OR Y OR ZR OR HF) (L) (TI
        OR V OR CR OR MN OR FE OR CO OR NI OR CU OR ZN OR
        NB) (L) (P OR SI OR GE OR SN OR SB))/ELS(L)4-7/ELC.SUB
L6      5396 SEA FILE=REGISTRY ABB=ON  PLU=ON  ((LA OR CE OR PR OR ND
        OR PM OR SM OR MG OR CA OR SR OR BA OR Y OR ZR OR HF) (L) (TI
        OR V OR CR OR MN OR FE OR CO OR NI OR CU OR ZN OR
        NB) (L) (P OR SI OR GE OR SN OR SB))/ELS(L)3/ELC.SUB
L8      5385 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L6
L10     18752 SEA FILE=HCAPLUS ABB=ON  PLU=ON  "BATTERY ANODES"+PFT,NT,OL
        D,NEW/CT
L11     24086 SEA FILE=HCAPLUS ABB=ON  PLU=ON  "BATTERY CATHODES"+PFT,NT,
        OLD,NEW/CT
L12     9464 SEA FILE=HCAPLUS ABB=ON  PLU=ON  "BATTERY ELECTROLYTES"+PFT
        ,NT,OLD,NEW/CT
L13     71770 SEA FILE=HCAPLUS ABB=ON  PLU=ON  "SECONDARY BATTERIES"+PFT,
        NT,OLD,NEW/CT
L14     666169 SEA FILE=HCAPLUS ABB=ON  PLU=ON  "CRYSTAL STRUCTURE"+PFT,NT
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L15     133 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L8 AND (L10 OR L11 OR L12
        OR L13)
L16     5 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L15 AND L14
L17     26 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L15 AND CRYSTAL?
L18     1 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L15 AND CRYSTAL AXES?
L19     24 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L3
L20     0 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L19 AND (L10 OR L11 OR
        L12 OR L13)
L21     0 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L19 AND (ELECTROD? OR
        BATTER? OR CATHOD? OR ANOD?)
L22     0 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L19 AND ELECTROCHEM?/SC,SX
L23     24 SEA FILE=HCAPLUS ABB=ON  PLU=ON  (L19 OR L20 OR L21 OR
        L22)
L24     1 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L23 AND LATTICE CONSTANT?
L25     0 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L23 AND CRYSTAL AXES?
L26     24 SEA FILE=HCAPLUS ABB=ON  PLU=ON  (L23 OR L24 OR L25)
L28     13 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L15 AND NEGATIVE ELECTROD?
L29     140 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L8 AND LATTICE CONST?
L30     0 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L29 AND CRYSTAL AXES?
L31     117 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L29 AND (L14 OR CRYSTAL
        STR?)
L32     2 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L31 AND ELECTROCHEM?/SC,SX
L33     78025 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L4
L34     1576 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L33 AND (L10 OR ANOD?)
L35     3 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L34 AND LATTICE CONSTANT?
L36     1 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L34 AND CRYSTAL AXES?
L37     28 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L34 AND (L14 OR CRYSTAL
        STR?)
L38     25 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L37 AND ELECTROCHEM?/SC,SX
L39     5 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L38 AND L8
L40     13 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L15 AND (L14 OR CRYSTAL
        STR?)
L41     33 SEA FILE=HCAPLUS ABB=ON  PLU=ON  (L38 OR L39 OR L40)

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L42 23 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (1840-2003)/PRY,AY
, PY
L43 31 SEA FILE=HCAPLUS ABB=ON PLU=ON L16 OR L17 OR L18 OR L20
OR L21 OR L22 OR L30 OR L32 OR L35 OR L36
L44 26 SEA FILE=HCAPLUS ABB=ON PLU=ON L43 AND (1840-2003)/PRY,AY
, PY
L45 37 SEA FILE=HCAPLUS ABB=ON PLU=ON L42 OR L44
L46 37 SEA FILE=HCAPLUS ABB=ON PLU=ON L45 AND ELECTROCHEM?/SC, SX

L47 37 SEA FILE=HCAPLUS ABB=ON PLU=ON L46 NOT L26
L48 11 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND (1840-2003)/PRY,AY
, PY
L49 46 SEA FILE=HCAPLUS ABB=ON PLU=ON L47 OR L48
L50 46 SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND ELECTROCHEM?/SC, SX

L51 46 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L26
L52 41 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND DEV/RL

=> d 152 hit rn 1-

YOU HAVE REQUESTED DATA FROM 41 ANSWERS - CONTINUE? Y/(N):n

=> => d 152 1-41 ibib ed abs hitstr hitind

L52 ANSWER 1 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:323474 HCAPLUS

DOCUMENT NUMBER: 142:395056

TITLE: Anode material for secondary nonaqueous
electrolyte battery, the anode, and the battery

INVENTOR(S): Sawa, Takao; Kawashima, Fumiyuki; Matsuno,
Shinsuke; Kono, Tatsuoki; Takami, Norio

PATENT ASSIGNEE(S): Toshiba Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
JP 2005100876	A	20050414	JP 2003-334582	20030926

<--

PRIORITY APPLN. INFO.: JP 2003-334582 20030926

<--

ED Entered STN: 15 Apr 2005

AB The material contains a **crystalline** alloy: AaSibMcTdxerf [A = Mg,
Ca, Sr, and/or Ba; M = Co, Ni, Fe, Cu, Mn, V, and/or Cr; T = Ti, Zr,
Hf, Nb, Ta, Mo, and/or W; X = Sn, Al, Sb, Zn, and/or In; R = rare
earth element(s); a+b+c+d+e+f = 100; a = 10-50; b = 30-65; 0<
c≤ 30; d = 0-10; e = 0-25; and f = 0-20]. The battery has an
anode, containing the above anode material.

IT 849800-40-4 849800-41-5 849800-42-6

(anode materials containing **crystalline** Si alloys for secondary
lithium batteries)

RN 849800-40-4 HCAPLUS

CN Silicon alloy, base, Si 38,Ca 36,Ni 27 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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```

=====+=====+=====
Si          38          7440-21-3
Ca          36          7440-70-2
Ni          27          7440-02-0

```

RN 849800-41-5 HCAPLUS
 CN Nickel alloy, base, Ni 55, Si 26, Ca 19 (9CI) (CA INDEX NAME)

```

Component    Component    Component
          Percent    Registry Number
=====+=====+=====
Ni          55          7440-02-0
Si          26          7440-21-3
Ca          19          7440-70-2

```

RN 849800-42-6 HCAPLUS
 CN Nickel alloy, base, Ni 42, Si 32, Ca 26 (9CI) (CA INDEX NAME)

```

Component    Component    Component
          Percent    Registry Number
=====+=====+=====
Ni          42          7440-02-0
Si          32          7440-21-3
Ca          26          7440-70-2

```

IC ICM H01M004-38
 ICS H01M004-02; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary lithium battery anode cryst silicon alloy
 IT **Battery anodes**
 (anode materials containing **crystalline Si** alloys for secondary lithium batteries)
 IT **Secondary batteries**
 (lithium; anode materials containing **crystalline Si** alloys for secondary lithium batteries)
 IT **849800-40-4 849800-41-5 849800-42-6**
 849800-43-7 849800-44-8 849800-45-9 849800-46-0 849800-47-1
 849800-48-2 849800-49-3 849800-50-6 849800-51-7 849800-52-8
 849800-53-9 849800-54-0 849800-55-1 849800-56-2 849800-57-3
 849800-58-4 849800-59-5 849800-61-9 849800-63-1 849800-65-3
 849800-66-4 849800-67-5 849800-68-6 849800-69-7 849800-70-0
 849800-71-1 849800-72-2 849800-73-3 849800-74-4 849800-75-5
 849800-76-6 849800-77-7 849800-79-9 849800-80-2 849800-81-3
 849800-82-4 849800-83-5 849800-84-6 849800-85-7 849800-86-8
 849800-87-9 849800-88-0 849800-89-1 849800-90-4 849800-92-6
 849800-93-7
 (anode materials containing **crystalline Si** alloys for secondary lithium batteries)

L52 ANSWER 2 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:302700 HCAPLUS

DOCUMENT NUMBER: 142:376526

TITLE: Anode material for secondary nonaqueous

electrolyte battery, the anode and the battery

INVENTOR(S): Sawa, Takao; Matsuno, Shinsuke; Kono, Tatsuoki;

Takami, Norio; Kawashima, Fumiyuki

PATENT ASSIGNEE(S): Toshiba Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 28 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005093416	A	20050407	JP 2004-93667	20040326
<--				
PRIORITY APPLN. INFO.:			JP 2003-89708	A 20030328
<--				
			JP 2003-290386	A 20030808
<--				

ED Entered STN: 08 Apr 2005

AB The material is represented as $RaSn_bMcT_dXeAf$ [R = rare earth element(s); M = Co, Ni, Cu, Mn, V, and/or Cr; T = Ti, Zr, Hf, Nb, Ta, Mo, and/or W; X = Si, Al, Sb, and/or In; A = Mg, Ca, Sr, and/or Ba; $a+b+c+d+e+f = 100$; $0 < a \leq 40$; $b = 45-70$; $0 < c \leq 30$; $d = 0-10$; $e = 0-20$; $f = 0-3$] and contains a **crystallin** alloy, having a R-Sn-M phase as main phase. The battery has an anode, using the above anode material, a cathode, and a nonaq. electrolyte.

IT 849431-14-7 849431-15-8 849431-51-2
 (anodes containing **crystallin** tin rare earth alloys for secondary lithium batteries)

RN 849431-14-7 HCAPLUS

CN Tin alloy, base, Sn 57, La 32, Ni 10 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Sn	57	7440-31-5
La	32	7439-91-0
Ni	10	7440-02-0

RN 849431-15-8 HCAPLUS

CN Tin alloy, base, Sn 54, La 33, Ni 13 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Sn	54	7440-31-5
La	33	7439-91-0
Ni	13	7440-02-0

RN 849431-51-2 HCAPLUS

CN Tin alloy, base, Sn 56, La 32, Ni 11 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Sn	56	7440-31-5
La	32	7439-91-0
Ni	11	7440-02-0

IC ICM H01M004-38

ICS H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Battery anodes

(anodes containing **crystallin** tin rare earth alloys for

secondary lithium batteries)
IT **Secondary batteries**
(lithium; anodes containing **crystallin** tin rare earth alloys
for secondary lithium batteries)
IT 96-49-1, Ethylene carbonate 623-53-0, Methyl ethyl carbonate
12190-79-3, Cobalt lithium oxide (CoLiO₂) 21324-40-3, Lithium
hexafluorophosphate 849431-14-7 849431-15-8
849431-16-9 849431-17-0 849431-18-1 849431-19-2 849431-20-5
849431-21-6 849431-22-7 849431-23-8 849431-24-9 849431-25-0
849431-26-1 849431-27-2 849431-28-3 849431-29-4 849431-30-7
849431-31-8 849431-32-9 849431-33-0 849431-34-1 849431-35-2
849431-36-3 849431-37-4 849431-39-6 849431-41-0 849431-43-2
849431-45-4 849431-47-6 849431-49-8 849431-51-2
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849431-62-5 849431-63-6 849431-64-7 849431-65-8 849431-66-9
849431-67-0 849431-68-1 849431-69-2 849431-70-5 849431-71-6
849431-72-7 849431-73-8 849431-74-9 849431-75-0
(anodes containing **crystallin** tin rare earth alloys for
secondary lithium batteries)

L52 ANSWER 3 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:885230 HCAPLUS

DOCUMENT NUMBER: 143:308993

TITLE: Synthesis and study of properties of finely
divided powdered electrode materials for
nickel-metal hydride secondary batteries

AUTHOR(S): Galkin, P. S.; Zelenin, Yu. M.; Osadchaya, L. I.;
Sokolov, V. V.; Denisova, T. N.; Mit'kin, V. N.;
Mukhin, V. V.

CORPORATE SOURCE: Inst. Neorg. Khim., SO RAN, Novosibirsk, Russia

SOURCE: Materialy Nauchno-Tekhnicheskoi Konferentsii
Sibirskogo Khimicheskogo Kombinata, 7th, Seversk,
Russian Federation, Oct. 22-25, 2002 (2003
), Meeting Date 2002, Volume 2, 118-122. SGTI: Seversk, Russia.

CODEN: 69FZZQ; ISBN: 5-93915-028-4

DOCUMENT TYPE: Conference

LANGUAGE: Russian

ED Entered STN: 25 Oct 2004

AB Study of properties of finely divided powdered electrode materials for
nickel-metal hydride secondary batteries is carried out. It is shown
that addition of cobalt oxalate and hydroxide to the precursor mixture
improve the cycling performance of electrode material.

IT 864515-79-7P 864515-80-0P 864515-81-1P

(properties of finely divided powdered electrode materials for
nickel-metal hydride secondary batteries)

RN 864515-79-7 HCAPLUS

CN Nickel alloy, base, Ni 64,La 32,Ge 4.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	64	7440-02-0
La	32	7439-91-0
Ge	4.1	7440-56-4

RN 864515-80-0 HCAPLUS

CN Nickel alloy, base, Ni 62,La 34,Sn 4.1 (9CI) (CA INDEX NAME)

Component	Component	Component
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	Percent	Registry Number
Ni	62	7440-02-0
La	34	7439-91-0
Sn	4.1	7440-31-5

RN 864515-81-1 HCAPLUS

CN Nickel alloy, base, Ni 62,La 30,Sn 7.8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	30	7439-91-0
Sn	7.8	7440-31-5

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56, 75

IT Crystal structure

Electric capacitance

Powders

Secondary batteries

(properties of finely divided powdered electrode materials for nickel-metal hydride secondary batteries)

IT 76131-47-0P 122232-06-8P 864515-79-7P 864515-80-0P

864515-81-1P 864515-83-3P 864515-84-4P 864515-85-5P

864515-86-6P

(properties of finely divided powdered electrode materials for nickel-metal hydride secondary batteries)

L52 ANSWER 4 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:876055 HCAPLUS

DOCUMENT NUMBER: 141:352768

TITLE: Nonaqueous electrolyte secondary battery

INVENTOR(S): Matsuno, Shinsuke; Kohnno, Tatsuoki; Sawa, Takao; Takami, Norio

PATENT ASSIGNEE(S): Kabushiki Kaisha Toshiba, Japan

SOURCE: Eur. Pat. Appl., 29 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1469538	A2	20041020	EP 2004-252246	20040416
<--				
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
JP 2004335439	A	20041125	JP 2003-336246	20030926
<--				
JP 3769277	B2	20060419		
KR 2004090905	A	20041027	KR 2004-26156	20040416
<--				
US 2004258993	A1	20041223	US 2004-825437	20040416
<--				
CN 1571210	A	20050126	CN 2004-10068452	20040416

PRIORITY APPLN. INFO.:

JP 2003-113190

A 20030417

JP 2003-336246

A 20030926

ED Entered STN: 22 Oct 2004

AB The present invention provides a nonaq. electrolyte secondary battery including a pos. electrode, a neg. electrode and a nonaq. electrolyte. The neg. electrode contains an alloy having a CeNiSi₂ type crystal structure.

IT 776302-89-7 776302-90-0

(nonaq. electrolyte secondary battery)

RN 776302-89-7 HCAPLUS

CN Lanthanum alloy, base, La 46,Ni 29,Sn 25 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
La	46	7439-91-0
Ni	29	7440-02-0
Sn	25	7440-31-5

RN 776302-90-0 HCAPLUS

CN Tin alloy, base, Sn 61,La 33,Ni 6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Sn	61	7440-31-5
La	33	7439-91-0
Ni	6	7440-02-0

IT 776302-88-6 776302-91-1 776302-92-2
 776302-93-3 776302-94-4 776302-95-5
 776302-96-6 776302-97-7 776302-98-8
 776302-99-9 776303-00-5 776303-01-6
 776303-02-7 776303-03-8 776303-04-9
 776303-05-0 776303-07-2 776303-08-3
 776303-10-7 776303-12-9 776303-14-1
 776303-16-3 776303-18-5 776303-19-6
 776303-21-0 776303-23-2 776303-25-4
 776303-27-6 776303-28-7

(nonaq. electrolyte secondary battery)

RN 776302-88-6 HCAPLUS

CN Tin alloy, base, Sn 66,La 21,Ni 13 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Sn	66	7440-31-5
La	21	7439-91-0
Ni	13	7440-02-0

RN 776302-91-1 HCAPLUS

CN Lanthanum alloy, base, La 67,Sn 21,Ni 12 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
La	67	7439-91-0

Sn	21	7440-31-5
Ni	12	7440-02-0

RN 776302-92-2 HCAPLUS

CN Tin alloy, base, Sn 60,La 30,Ni 11 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Sn	60	7440-31-5
La	30	7439-91-0
Ni	11	7440-02-0

RN 776302-93-3 HCAPLUS

CN Barium alloy, base, Ba 38,Sn 27,La 19,Ni 16 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Ba	38	7440-39-3
Sn	27	7440-31-5
La	19	7439-91-0
Ni	16	7440-02-0

RN 776302-94-4 HCAPLUS

CN Tin alloy, base, Sn 52,Ni 18,Ce 15,Nd 15 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Sn	52	7440-31-5
Ni	18	7440-02-0
Ce	15	7440-45-1
Nd	15	7440-00-8

RN 776302-95-5 HCAPLUS

CN Tin alloy, base, Sn 38,Ni 28,Y 23,Pr 11 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Sn	38	7440-31-5
Ni	28	7440-02-0
Y	23	7440-65-5
Pr	11	7440-10-0

RN 776302-96-6 HCAPLUS

CN Tin alloy, base, Sn 66,Ni 23,Mg 11 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Sn	66	7440-31-5
Ni	23	7440-02-0
Mg	11	7439-95-4

RN 776302-97-7 HCAPLUS

CN Tin alloy, base, Sn 51,Ni 18,Pm 15,Hf 9,Sm 7.6 (9CI) (CA INDEX NAME)

Component	Component	Component
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	Percent	Registry Number
=====+=====+=====		
Sn	51	7440-31-5
Ni	18	7440-02-0
Pm	15	7440-12-2
Hf	9	7440-58-6
Sm	7.6	7440-19-9

RN 776302-98-8 HCAPLUS

CN Tin alloy, base, Sn 41,La 35,Ni 19,Ba 4.4,Ca 1.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Sn	41	7440-31-5
La	35	7439-91-0
Ni	19	7440-02-0
Ba	4.4	7440-39-3
Ca	1.3	7440-70-2

RN 776302-99-9 HCAPLUS

CN Tin alloy, base, Sn 60,La 30,Ni 8.7,Nb 1.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Sn	60	7440-31-5
La	30	7439-91-0
Ni	8.7	7440-02-0
Nb	1.4	7440-03-1

RN 776303-00-5 HCAPLUS

CN Tin alloy, base, Sn 60,La 28,Ni 8,Co 3.8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Sn	60	7440-31-5
La	28	7439-91-0
Ni	8	7440-02-0
Co	3.8	7440-48-4

RN 776303-01-6 HCAPLUS

CN Lanthanum alloy, base, La 49,Sn 37,Ni 13,Fe 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
La	49	7439-91-0
Sn	37	7440-31-5
Ni	13	7440-02-0
Fe	0.3	7439-89-6

RN 776303-02-7 HCAPLUS

CN Tin alloy, base, Sn 61,La 28,Ni 7.1,Ti 3.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		

Sn	61	7440-31-5
La	28	7439-91-0
Ni	7.1	7440-02-0
Ti	3.9	7440-32-6

RN 776303-03-8 HCAPLUS

CN Tin alloy, base, Sn 62,La 27,Ni 8.9,Ti 1.1,V 0.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Sn	62	7440-31-5
La	27	7439-91-0
Ni	8.9	7440-02-0
Ti	1.1	7440-32-6
V	0.4	7440-62-2

RN 776303-04-9 HCAPLUS

CN Lanthanum alloy, base, La 44,Sn 37,Ni 19 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
La	44	7439-91-0
Sn	37	7440-31-5
Ni	19	7440-02-0

RN 776303-05-0 HCAPLUS

CN Tin alloy, base, Sn 51,La 40,Ni 8.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Sn	51	7440-31-5
La	40	7439-91-0
Ni	8.5	7440-02-0

RN 776303-07-2 HCAPLUS

CN Tin alloy, base, Sn 71,La 24,Ni 5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Sn	71	7440-31-5
La	24	7439-91-0
Ni	5	7440-02-0

RN 776303-08-3 HCAPLUS

CN Tin alloy, base, Sn 44,La 34,Ni 22 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Sn	44	7440-31-5
La	34	7439-91-0
Ni	22	7440-02-0

RN 776303-10-7 HCAPLUS

CN Tin alloy, base, Sn 65,La 22,Ni 14 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Sn	65	7440-31-5
La	22	7439-91-0
Ni	14	7440-02-0

RN 776303-12-9 HCAPLUS

CN Tin alloy, base, Sn 56,La 33,Ni 11 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Sn	56	7440-31-5
La	33	7439-91-0
Ni	11	7440-02-0

RN 776303-14-1 HCAPLUS

CN Cerium alloy, base, Ce 59,Si 24,Ni 17 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Ce	59	7440-45-1
Si	24	7440-21-3
Ni	17	7440-02-0

RN 776303-16-3 HCAPLUS

CN Tin alloy, base, Sn 63,La 19,Ni 7.9,Ca 5.4,Co 4.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Sn	63	7440-31-5
La	19	7439-91-0
Ni	7.9	7440-02-0
Ca	5.4	7440-70-2
Co	4.7	7440-48-4

RN 776303-18-5 HCAPLUS

CN Germanium alloy, base, Ge 52,Ce 17,Ni 17,Zr 11,Fe 4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Ge	52	7440-56-4
Ce	17	7440-45-1
Ni	17	7440-02-0
Zr	11	7440-67-7
Fe	4	7439-89-6

RN 776303-19-6 HCAPLUS

CN Tin alloy, base, Sn 56,La 23,Ba 9.7,Ni 6.9,Co 4.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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```

=====+=====+=====
  Sn          56          7440-31-5
  La          23          7439-91-0
  Ba          9.7         7440-39-3
  Ni          6.9         7440-02-0
  Co          4.2         7440-48-4

```

RN 776303-21-0 HCAPLUS

CN Tin alloy, base, Sn 56,La 23,Ni 14,Ti 3.4,Mg 1.7,P 1.5 (9CI) (CA INDEX NAME)

```

Component      Component      Component
          Percent      Registry Number
=====+=====+=====
  Sn          56          7440-31-5
  La          23          7439-91-0
  Ni          14          7440-02-0
  Ti          3.4         7440-32-6
  Mg          1.7         7439-95-4
  P           1.5         7723-14-0

```

RN 776303-23-2 HCAPLUS

CN Lanthanum alloy, base, La 55,Si 22,Ni 6.9,V 6,Ti 5.6,Sb 4.8 (9CI) (CA INDEX NAME)

```

Component      Component      Component
          Percent      Registry Number
=====+=====+=====
  La          55          7439-91-0
  Si          22          7440-21-3
  Ni          6.9         7440-02-0
  V           6           7440-62-2
  Ti          5.6         7440-32-6
  Sb          4.8         7440-36-0

```

RN 776303-25-4 HCAPLUS

CN Tin alloy, base, Sn 58,La 29,Ni 9.9,Cr 3.3 (9CI) (CA INDEX NAME)

```

Component      Component      Component
          Percent      Registry Number
=====+=====+=====
  Sn          58          7440-31-5
  La          29          7439-91-0
  Ni          9.9         7440-02-0
  Cr          3.3         7440-47-3

```

RN 776303-27-6 HCAPLUS

CN Cerium alloy, base, Ce 64,Si 23,Mn 7.5,Ni 5.4 (9CI) (CA INDEX NAME)

```

Component      Component      Component
          Percent      Registry Number
=====+=====+=====
  Ce          64          7440-45-1
  Si          23          7440-21-3
  Mn          7.5         7439-96-5
  Ni          5.4         7440-02-0

```

RN 776303-28-7 HCAPLUS

CN Tin alloy, base, Sn 65,Sr 15,Ce 10,Ni 7,Nb 2.2,Zn 1.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Sn	65	7440-31-5
Sr	15	7440-24-6
Ce	10	7440-45-1
Ni	7	7440-02-0
Nb	2.2	7440-03-1
Zn	1.6	7440-66-6

IC ICM H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

Section cross-reference(s): 56

IT Battery anodes

Battery cathodes

Battery electrolytes

Crystal structure

Secondary batteries

(nonaq. electrolyte secondary battery)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate
12190-79-3, Cobalt lithium oxide (CoLiO₂) 21324-40-3, Lithium
hexafluorophosphate 776302-89-7 776302-90-0

(nonaq. electrolyte secondary battery)

IT 776302-88-6 776302-91-1 776302-92-2
776302-93-3 776302-94-4 776302-95-5
776302-96-6 776302-97-7 776302-98-8
776302-99-9 776303-00-5 776303-01-6
776303-02-7 776303-03-8 776303-04-9
776303-05-0 776303-07-2 776303-08-3
776303-10-7 776303-12-9 776303-14-1
776303-16-3 776303-18-5 776303-19-6
776303-21-0 776303-23-2 776303-25-4
776303-27-6 776303-28-7

(nonaq. electrolyte secondary battery)

L52 ANSWER 5 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:740649 HCAPLUS

DOCUMENT NUMBER: 141:228171

TITLE: Fabrication of Li polymer batteries with separator
dispersion

INVENTOR(S): Naarmann, Herbert; Kruger, Franz Josef

PATENT ASSIGNEE(S): Gaia Akkumulatorenwerke G.m.b.H., Germany

SOURCE: PCT Int. Appl., 19 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
WO 2004077588	A2	20040910	WO 2004-EP1933	20040226

<--

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, EG, ES, FI, GB,
GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX,
MZ, NA, NI, NO

RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT,
 BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
 IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI,
 CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

DE 10308945 A1 20040923 DE 2003-10308945 20030228

<--

EP 1649537 A2 20060426 EP 2004-714781 20040226

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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
 PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

EP 1783852 A2 20070509 EP 2007-103829 20040226

<--

R: CZ, ES, FR, GB

PRIORITY APPLN. INFO.:

DE 2003-10308945 A 20030228

<--

EP 2004-714781 A3 20040226

WO 2004-EP1933 W 20040226

ED Entered STN: 10 Sep 2004

AB The invention concerns Li polymer batteries provided with a separator system which comprises a dispersion and method for the production of Li polymer batteries. According to the inventive method for the production of Li polymer batteries, the dispersion is applied to the anodes and/or cathode material.

IT 1318-00-9, Vermiculite

(fabrication of Li polymer batteries with separator dispersion)

RN 1318-00-9 HCAPLUS

CN Vermiculite (Mg_{0.33}[Mg₂₋₃(Al₀₋₁Fe₀₋₁)₀₋₁](Si_{2.33-3.33}Al_{0.67-1.67})(OH)₂O_{10.4}H₂O) (CA INDEX NAME)

CM 1

CRN 122872-60-0

CMF Al . Fe . H O . Mg . O₃ Si . O

CCI TIS

CM 2

CRN 17778-80-2

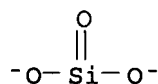
CMF O

O

CM 3

CRN 15593-90-5

CMF O₃ Si



CM 4

CRN 14280-30-9
CMF H O

OH-

CM 5
CRN 7439-95-4
CMF Mg

Mg

CM 6
CRN 7439-89-6
CMF Fe

Fe

CM 7
CRN 7429-90-5
CMF Al

Al

IC ICM H01M
CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)
Section cross-reference(s): 38
IT Zeolites (synthetic), uses
(fabrication of Li polymer batteries with separator dispersion)
IT 1305-78-8, Calcium oxide, uses 1309-48-4, Magnesia, uses
1318-00-9, Vermiculite 1344-28-1, Alumina, uses 9011-17-0,
Kynar 2801 13453-69-5, Lithium metaborate 746641-96-3, Dyneon 210
(fabrication of Li polymer batteries with separator dispersion)

L52 ANSWER 6 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:548031 HCAPLUS

DOCUMENT NUMBER: 141:91822

TITLE: Anode material for nonaqueous electrolyte battery,
the anode, and the battery

INVENTOR(S): Sawa, Takao; Kono, Tatsuoki; Matsuno, Shinsuke;
Takami, Norio

PATENT ASSIGNEE(S): Toshiba Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004193005	A	20040708	JP 2002-360939	20021212

PRIORITY APPLN. INFO.: JP 2002-360939 20021212

ED Entered STN: 08 Jul 2004

AB The anode material is RMx(Sn1-aXa)yTz (R ≥1 rare earth element; M = Ni, Cu, Co, Fe, and/or Mn; X = Si, Ge, Ga, and/or Al; T = Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, and/or W; 1.8 ≤x ≤2.2, 1.8 ≤y ≤2.2, z ≤0.2, and a ≤0.4) containing tetragonal **crystalline** phase. The battery uses an anode containing the anode material.

IT 716379-56-5P 716379-57-6P

(rare earth alloys containing tetragonal **crystalline** structures for secondary lithium battery anodes)

RN 716379-56-5 HCAPLUS

CN Tin alloy, base, Sn 48,La 28,Ni 24 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Sn	48	7440-31-5
La	28	7439-91-0
Ni	24	7440-02-0

RN 716379-57-6 HCAPLUS

CN Tin alloy, base, Sn 47,La 28,Cu 25 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Sn	47	7440-31-5
La	28	7439-91-0
Cu	25	7440-50-8

IC ICM H01M004-38

ICS H01M004-02; H01M006-16; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nonaq battery anode tetragonal **cryst** rare earth alloy

IT **Battery anodes**

(rare earth alloys containing tetragonal **crystalline** structures for secondary lithium battery anodes)

IT 716379-56-5P 716379-57-6P 716379-58-7P
 716379-59-8P 716379-60-1P 716379-61-2P 716379-62-3P
 716379-63-4P 716379-64-5P 716379-65-6P 716379-66-7P
 716379-67-8P 716379-68-9P 716379-69-0P 716379-70-3P
 716379-71-4P 716379-72-5P 716379-73-6P 716379-74-7P
 716379-75-8P 716379-76-9P 716379-77-0DP, La0.8Ce0.2Cu1.9Sn2V0.1
 716379-78-1P 716379-79-2P 716379-80-5P 716379-81-6P
 716379-82-7P 716379-83-8P 716379-84-9P 716379-85-0P
 716379-86-1P 716379-87-2P 716379-88-3P

(rare earth alloys containing tetragonal **crystalline** structures for secondary lithium battery anodes)

L52 ANSWER 7 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:530340 HCAPLUS

DOCUMENT NUMBER: 141:91776

TITLE: Electrode material for secondary nonaqueous electrolyte battery, the electrode, and the battery

INVENTOR(S): Sawa, Takao; Kono, Tatsuoki; Matsuno, Shinsuke; Takami, Norio

PATENT ASSIGNEE(S): Toshiba Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004185881	A	20040702	JP 2002-349197	20021129

PRIORITY APPLN. INFO.:

JP 2002-349197 20021129

ED Entered STN: 02 Jul 2004

AB The material is represented as SnaCobMcTdxXe or $\text{Sna}(\text{Co1-yFey})\text{bMcTdxXe}$ ($\text{M} = \text{Ni, Cu, Mn, V, and/or Cr}$; $\text{T} = \text{Ti, Zr, Hf, Nb, Ta, Mo, W, and/or rare earth elements}$; $\text{X} = \text{Si, Al, Sb, and/or In}$; $\text{a+b+c+d+e} = 100$; $\text{a} = 40-50$; $\text{b} = 35-55$; $\text{c} = 0-20$; $\text{d} = 0-10$; $\text{e} = 0-20$; $0 < \text{yr} \leq 0.8$) and comprises an alloy, containing a hexagonal structured **crystal** phase. The battery has an anode containing the above mat, a cathode, and a nonaq. electrolyte.

IT 12526-60-2 12526-64-6

(compsn. of anode materials containing cobalt tin composite alloys for secondary batteries)

RN 12526-60-2 HCAPLUS

CN Cobalt, compd. with hafnium and tin (2:1:1) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Hf	1	7440-58-6
Co	2	7440-48-4
Sn	1	7440-31-5

RN 12526-64-6 HCAPLUS

CN Cobalt, compd. with tin and zirconium (2:1:1) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Zr	1	7440-67-7
Co	2	7440-48-4
Sn	1	7440-31-5

IC ICM H01M004-38

ICS C22C013-00; C22C019-07; H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery anode tin Co alloy compn **crystal** phase

IT Battery anodes

Secondary batteries

(compsn. of anode materials containing cobalt tin composite alloys for secondary batteries)

IT 96-49-1, Ethylene carbonate 623-53-0, Methyl ethyl carbonate
12023-00-6 12190-79-3, Cobalt lithium oxide (CoLiO2) 12297-65-3
12526-60-2 12526-62-4 12526-63-5 12526-64-6
12526-67-9 12794-61-5 21324-40-3, Lithium hexafluorophosphate
109118-19-6 110445-75-5 110445-81-3 716378-22-2 716378-24-4
716378-27-7 716378-31-3 716378-33-5 716378-34-6 716378-35-7
716378-36-8 716378-37-9 716378-38-0 716378-39-1 716378-40-4
716378-41-5 716378-42-6 716378-43-7 716378-44-8 716378-45-9
716378-46-0 716378-47-1 716378-48-2 716378-49-3 716378-50-6
716378-51-7 716378-52-8 716378-53-9 716378-54-0 716378-55-1
716378-56-2 716378-57-3 716378-58-4

(compsn. of anode materials containing cobalt tin composite alloys for secondary batteries)

L52 ANSWER 8 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:408231 HCAPLUS

DOCUMENT NUMBER: 140:393387

TITLE: Modified anodes for lithium polymer batteries

INVENTOR(S): Naarmann, Herbert; Kruger, Franz Josef

PATENT ASSIGNEE(S): Gaia Akkumulatorenwerke G.m.b.H., Germany

SOURCE: Ger. Offen., 8 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10251239	A1	20040519	DE 2002-10251239	20021104

PRIORITY APPLN. INFO.: DE 2002-10251239 20021104

ED Entered STN: 20 May 2004

AB Anodes for lithium polymer cells are disclosed, where the active anode materials are modified with tin and/or organo-tin compds. This modification occurs especially via reaction with Sn-organic compds., vaporizing with tin, deposition of Sn, fine distribution of Sn or use of tin film as anode current collector. All specified measures according to invention were aimed to produce solid electrode interface for improved batteries, a suppressing of failure mechanisms (fading, cycle number) and among other things favorably to prevent to secondary reactions leading deposits. In addition, the measures serve the surface texture and elimination of irregular perturbative fields also for the battery improvement. Thus, the lithium polymer cells with so modified anodes possess protruding cycle stability and efficiency. The modified anodes can be used as components of Li polymer cells, diodes, electronic switches, measuring probes, light beam guards, databanks, electrophoresis units or detectors.

IT 1318-00-9, Vermiculite
(modified anodes for lithium polymer batteries)

RN 1318-00-9 HCAPLUS

CN Vermiculite (Mg0.33[Mg2-3(Al0-1Fe0-1)0-1](Si2.33-3.33Al0.67-1.67)(OH)2O10.4H2O) (CA INDEX NAME)

CM 1

CRN 122872-60-0
CMF Al . Fe . H O . Mg . O3 Si . O
CCI TIS

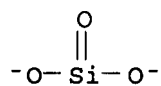
CM 2

CRN 17778-80-2
CMF O

O

CM 3

CRN 15593-90-5
CMF O3 Si



CM 4

CRN 14280-30-9
CMF H O

OH⁻

CM 5

CRN 7439-95-4
CMF Mg

Mg

CM 6

CRN 7439-89-6
CMF Fe

Fe

CM 7

CRN 7429-90-5

CMF A1

A1

IC ICM H01M004-38
ICS H01M004-60
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 74, 76
ST battery lithium polymer modified **anode**
IT Glycols, uses
(ethers; modified **anodes** for lithium polymer batteries)
IT Ethers, uses
(glycol; modified **anodes** for lithium polymer batteries)
IT Secondary batteries
(lithium; modified **anodes** for lithium polymer batteries)
IT **Battery anodes**
Diodes
Electric switches
Electrophoresis apparatus
Sensors
(modified **anodes** for lithium polymer batteries)
IT Carbon black, uses
Lactams
Lactones
Polyacetylenes, uses
(modified **anodes** for lithium polymer batteries)
IT **Zeolites (synthetic)**, uses
(modified **anodes** for lithium polymer batteries)
IT Information systems
(storage; modified **anodes** for lithium polymer batteries)
IT 7439-93-2D, Lithium, organoborate 7440-31-5, Tin, uses 7440-31-5D, Tin, organic compound 7440-44-0, Carbon, uses 7440-50-8, Copper, uses 7782-42-5, Graphite, uses 9033-83-4, Polyphenylene 21324-40-3, Lithium hexafluorophosphate 25067-58-7, Polyacetylene 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate
(modified **anodes** for lithium polymer batteries)
IT 1309-48-4, Magnesium oxide (MgO), uses 1318-00-9, Vermiculite 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 9011-17-0, Kynar 2801
(modified **anodes** for lithium polymer batteries)

L52 ANSWER 9 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:5013 HCAPLUS

DOCUMENT NUMBER: 138:42071

TITLE: Battery anode material containing a magnesium compound

INVENTOR(S): Yamada, Shinichiro; Inoue, Hiroshi; Endo, Takuya

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: Eur. Pat. Appl., 13 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 1271676 A1 20030102 EP 2002-12747 20020607

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

JP 2003017048 A 20030117 JP 2001-195104 20010627

JP 3533664 B2 20040531

US 2003013018 A1 20030116 US 2002-171117 20020613

US 7097938 B2 20060829

PRIORITY APPLN. INFO.: JP 2001-195104 A 20010627

ED Entered STN: 03 Jan 2003

AB A **neg. electrode** material and a battery which has an excellent cycle characteristic as well as a high capacity are provided. A **pos. electrode** housed in an exterior can and a **neg. electrode** housed in an exterior cup are laminated with a separator there between. An electrolytic solution of lithium salt dissolved in a solvent is poured into the inside of both the exterior can and the exterior cup. The **neg. electrode** contains $Mg_{2-x}MIIxMI$. MI expresses a first element such as Si, Sn, Ge, Pb, or the like. MII expresses a second element which is a metallic element, preferably Mn, Cu, Zn, or the like except both Mg and the first element. The x is preferably in the range of $0.1 \leq x \leq 1.9$. Substituting part of Mg by the second element MII can produce the distortion of the **crystal structure**, ease distortion accompanying the occluding/releasing lithium, and improve the charge and discharge efficiency and the cycle characteristic.

IT 478396-94-0, Magnesium manganese silicide ($Mg_{1.9}Mn_{0.1}Si$)
478396-96-2, Magnesium manganese silicide ($Mg_{1.5}Mn_{0.5}Si$)
478396-98-4, Magnesium manganese silicide ($MgMnSi$)
478397-01-2, Magnesium manganese silicide ($Mg_{0.5}Mn_{1.5}Si$)
478397-03-4, Copper magnesium silicide ($Cu_{0.5}Mg_{1.5}Si$)
478397-05-6, Magnesium zinc silicide ($Mg_{1.5}Zn_{0.5}Si$)
(battery anode material containing magnesium compound)

RN 478396-94-0 HCAPLUS

CN Magnesium manganese silicide ($Mg_{1.9}Mn_{0.1}Si$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Si	1	7440-21-3
Mn	0.1	7439-96-5
Mg	1.9	7439-95-4

RN 478396-96-2 HCAPLUS

CN Magnesium manganese silicide ($Mg_{1.5}Mn_{0.5}Si$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Si	1	7440-21-3
Mn	0.5	7439-96-5
Mg	1.5	7439-95-4

RN 478396-98-4 HCAPLUS

CN Magnesium manganese silicide ($MgMnSi$) (9CI) (CA INDEX NAME)

Component	Ratio	Component
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		Registry Number
=====	=====	=====
Si	1	7440-21-3
Mn	1	7439-96-5
Mg	1	7439-95-4

RN 478397-01-2 HCAPLUS

CN Magnesium manganese silicide (Mg_{0.5}Mn_{1.5}Si) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Si	1	7440-21-3
Mn	1.5	7439-96-5
Mg	0.5	7439-95-4

RN 478397-03-4 HCAPLUS

CN Copper magnesium silicide (Cu_{0.5}Mg_{1.5}Si) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Cu	0.5	7440-50-8
Si	1	7440-21-3
Mg	1.5	7439-95-4

RN 478397-05-6 HCAPLUS

CN Magnesium zinc silicide (Mg_{1.5}Zn_{0.5}Si) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Zn	0.5	7440-66-6
Si	1	7440-21-3
Mg	1.5	7439-95-4

IC ICM H01M004-38

ICS H01M004-46

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Battery anodes

Secondary batteries

(battery anode material containing magnesium compound)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
 478396-94-0, Magnesium manganese silicide (Mg_{1.9}Mn_{0.1}Si)
 478396-96-2, Magnesium manganese silicide (Mg_{1.5}Mn_{0.5}Si)
 478396-98-4, Magnesium manganese silicide (MgMnSi)
 478397-01-2, Magnesium manganese silicide (Mg_{0.5}Mn_{1.5}Si)
 478397-03-4, Copper magnesium silicide (Cu_{0.5}Mg_{1.5}Si)
 478397-05-6, Magnesium zinc silicide (Mg_{1.5}Zn_{0.5}Si)

(battery anode material containing magnesium compound)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L52 ANSWER 10 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:780620 HCAPLUS

DOCUMENT NUMBER: 138:41933

TITLE: Electrochemical properties and structure of
 MnNi₅-xSn_x system

AUTHOR(S): Lin, Qin; Zhu, Dajian; Zhao, Shuang
 CORPORATE SOURCE: Metallurgy School, University of Science and Technology Beijing, Beijing, 100083, Peop. Rep. China
 SOURCE: Journal of University of Science and Technology Beijing (2002), 9(4), 269-272
 CODEN: JSTBFO; ISSN: 1005-8850
 PUBLISHER: University of Science and Technology Beijing
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 ED Entered STN: 14 Oct 2002
 AB The electrochem. properties and structure of $M\text{Ni}_5\text{-xSn}_x$ ($x=0\text{-}0.5$) hydrogen storage alloys were investigated by pressure-composition isotherms, electrochem. measurements, X-ray diffraction (XRD), XPS and atomic parameters. With a small amount of tin substitution, the cycle life increases by 52% (0.5C) and 42% (1.0C), but maximum discharge capacity decreases only by 3.0% and 3.5%, resp. The cycle life is obviously improved by the low volume expansion and the formed SnO_2 surface layers upon electrochem. cycling. The substitution of Ni by Sn leads to an increase of the unit cell volume and charge-discharge cycle life and decrease of the plateau pressure, hysteresis and the hydrogen storage capacity. The standard enthalpy of hydride formation decreases with increasing tin substitution. The main factor that influences the standard enthalpy of the hydriding reaction is the number of the outer orbit electrons and not the atomic size factor.
 IT 142366-54-9 (electrochem. properties and structure of $\text{MisNi}_5\text{-xSn}_x$ hydrogen storage alloy)
 RN 142366-54-9 HCAPLUS
 CN Nickel alloy, base, Ni 66, La 32, Sn 2.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	66	7440-02-0
La	32	7439-91-0
Sn	2.7	7440-31-5

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56, 69, 72

IT Secondary batteries

(electrochem. properties and structure of $\text{MisNi}_5\text{-xSn}_x$ hydrogen storage alloy in relation to)

IT Crystal structure

X-ray photoelectron spectra
 (of $\text{MisNi}_5\text{-xSn}_x$ hydrogen storage alloy)

IT 142366-54-9 161842-22-4 251481-71-7 251481-72-8
 251481-73-9 478805-94-6

(electrochem. properties and structure of $\text{MisNi}_5\text{-xSn}_x$ hydrogen storage alloy)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 11 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:726680 HCAPLUS

DOCUMENT NUMBER: 135:291336

TITLE: Hydrogen-absorbing titanium-chromium alloy anode and its manufacture

INVENTOR(S): Tsuji, Yoichiro; Yamamoto, Toru; Toyoguchi,
Yoshinori; Matsuda, Hiromu
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001273891	A	20011005	JP 2000-34767	20000214

PRIORITY APPLN. INFO.: JP 1999-38376 A 19990217
JP 2000-10938 A 20000119

ED Entered STN: 05 Oct 2001

AB The anode comprises a granular active mass containing a H-absorbing alloy represented as $Ti a M_1 b Cr c M_2 d L e$ ($M_1 = Nb$ and/or Mo ; $M_2 = Mn, Fe, Co, Cu, V, Zn, Zr, Ag, Hf, Ta, W, Al, Si, C, N, P$, and/or B ; $L =$ rare earth metal and/or Y ; $a = 0.2-0.7$; $b = 0.01-0.4$; $c = 0.1-0.7$; $d = 0-0.3$; $e = 0-0.03$; $a + b + c + d + e = 1.0$) having body-centered cubic or tetragonal crystal structure and comprising a Ti-Ni-based alloy phase on its surface. The anode is manufactured by following steps; (A) forming a Ni layer on a H-absorbing alloy powder by plating, adhering a Ni powder, or mixing with a gas containing Ni carbonyl and then thermal decomposition of the gas and then (B) heating the treated powder under inert gas atmospheric, H gas atmospheric, or vacuum at 500-1000°. A secondary alkaline battery using the anode has high capacity and long cycle life.

IT 288847-91-6 288847-94-9 288848-01-1
288848-02-2 288848-03-3 288848-05-5

(hydrogen-absorbing anode containing Ti-Cr alloy powder having Ti-Ni alloy surface manufactured by nickel coating and heating)

RN 288847-91-6 HCAPLUS

CN Titanium alloy, base, Ti 45, Cr 34, Mo 13, La 5.2, Si 3.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	45	7440-32-6
Cr	34	7440-47-3
Mo	13	7439-98-7
La	5.2	7439-91-0
Si	3.2	7440-21-3

RN 288847-94-9 HCAPLUS

CN Titanium alloy, base, Ti 43, Cr 33, Mo 17, La 5, P 1.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	43	7440-32-6
Cr	33	7440-47-3
Mo	17	7439-98-7

La 5 7439-91-0
P 1.7 7723-14-0

RN 288848-01-1 HCAPLUS

CN Titanium alloy, base, Ti 40,Cr 32,Mo 18,La 5.2,Si 5.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	40	7440-32-6
Cr	32	7440-47-3
Mo	18	7439-98-7
La	5.2	7439-91-0
Si	5.2	7440-21-3

RN 288848-02-2 HCAPLUS

CN Titanium alloy, base, Ti 39,Cr 31,Mo 17,Fe 5.1,La 5,Si 2.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	39	7440-32-6
Cr	31	7440-47-3
Mo	17	7439-98-7
Fe	5.1	7439-89-6
La	5	7439-91-0
Si	2.5	7440-21-3

RN 288848-03-3 HCAPLUS

CN Titanium alloy, base, Ti 40,Cr 32,Mo 18,La 5.1,Si 4.1,Fe 2.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	40	7440-32-6
Cr	32	7440-47-3
Mo	18	7439-98-7
La	5.1	7439-91-0
Si	4.1	7440-21-3
Fe	2.1	7439-89-6

RN 288848-05-5 HCAPLUS

CN Titanium alloy, base, Ti 38,Cr 31,Mo 17,Fe 8,La 5,Si 1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	38	7440-32-6
Cr	31	7440-47-3
Mo	17	7439-98-7
Fe	8	7439-89-6
La	5	7439-91-0
Si	1	7440-21-3

IC ICM H01M004-38

ICS B22F005-00; C22C014-00; C22C019-00; H01M004-24; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 56

ST hydrogen absorbing anode titanium chromium alloy nickel coating heating; battery anode hydrogen absorbing titanium chromium alloy

IT Coating process
 (electroless; hydrogen-absorbing anode containing Ti-Cr alloy powder having Ti-Ni alloy surface manufactured by nickel coating and heating)

IT Battery anodes
 Heating
 Mechanical alloying
 Thermal decomposition
 (hydrogen-absorbing anode containing Ti-Cr alloy powder having Ti-Ni alloy surface manufactured by nickel coating and heating)

IT 1333-74-0, Hydrogen, uses
 (hydrogen-absorbing anode containing Ti-Cr alloy powder having Ti-Ni alloy surface manufactured by nickel coating and heating)

IT 288847-66-5 288847-67-6 288847-68-7 288847-69-8 288847-70-1
 288847-71-2 288847-72-3 288847-73-4 288847-74-5 288847-75-6
 288847-77-8 288847-79-0 288847-80-3 288847-81-4 288847-82-5
 288847-83-6 288847-84-7 288847-85-8 288847-86-9 288847-87-0
 288847-88-1 288847-89-2 288847-90-5 288847-91-6
 288847-92-7 288847-93-8 288847-94-9 288847-95-0
 288847-96-1 288847-97-2 288847-98-3 288847-99-4 288848-00-0
 288848-01-1 288848-02-2 288848-03-3
 288848-05-5
 (hydrogen-absorbing anode containing Ti-Cr alloy powder having Ti-Ni alloy surface manufactured by nickel coating and heating)

IT 12683-48-6P
 (hydrogen-absorbing anode containing Ti-Cr alloy powder having Ti-Ni alloy surface manufactured by nickel coating and heating)

IT 7440-02-0, Nickel, processes 13463-39-3, Nickel carbonyl
 104709-35-5, Sumer S 780
 (hydrogen-absorbing anode containing Ti-Cr alloy powder having Ti-Ni alloy surface manufactured by nickel coating and heating)

L52 ANSWER 12 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:691889 HCAPLUS

DOCUMENT NUMBER: 135:229387

TITLE: Battery with nonaqueous electrolyte and improved anode active material

INVENTOR(S): Inagaki, Hiroki; Takami, Norio

PATENT ASSIGNEE(S): Kabushiki Kaisha Toshiba, Japan

SOURCE: Eur. Pat. Appl., 12 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1134824	A2	20010919	EP 2001-302081	20010307
EP 1134824	A3	20031029		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 2001046629	A1	20011129	US 2001-797883	20010305

US 6686090 B2 20040203 <--
 JP 2001332253 A 20011130 JP 2001-72061 20010314

JP 3648458 B2 20050518 <--
 CN 1313645 A 20010919 CN 2001-111478 20010315

PRIORITY APPLN. INFO.: JP 2000-72377 A 20000315 <--

ED Entered STN: 21 Sep 2001

AB The development of a new anode material led to the provision of a battery with nonaq. electrolyte which has a combination of a high discharge capacity with excellent cycling characteristics. The battery with nonaq. electrolyte comprises: a cathode and an anode having an anode active material capable of occluding and releasing an alkali metal. The anode active material contains ≥ 1 element selected from the group consisting of Group 4B elements and Group 5B elements and has ≥ 1 crystal structure selected from the group consisting of BiF3 structure, Cu2MnAl structure, and AgAsMg structure. The anode active material contains ≥ 1 element selected from the group consisting of Al, Si, Ge, Sn, P, Sb, and Bi and has ≥ 1 crystal structure selected from the group consisting of BiF3 structure, Cu2MnAl structure, and AgAsMg structure.

IT 12423-44-8 60968-66-3 359783-12-3

359783-13-4 359783-14-5

(battery with nonaq. electrolyte and improved anode active material)

RN 12423-44-8 HCAPLUS

CN Antimony, compd. with magnesium and nickel (1:1:1) (7CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Sb	1	7440-36-0
Ni	1	7440-02-0
Mg	1	7439-95-4

RN 60968-66-3 HCAPLUS

CN Antimony, compd. with copper and magnesium (1:1:1) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Cu	1	7440-50-8
Sb	1	7440-36-0
Mg	1	7439-95-4

RN 359783-12-3 HCAPLUS

CN Antimony, compd. with magnesium and nickel (1:1:2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Sb	1	7440-36-0
Ni	2	7440-02-0
Mg	1	7439-95-4

RN 359783-13-4 HCAPLUS

CN Antimony, compd. with cobalt and magnesium (1:2:1) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Co	2	7440-48-4
Sb	1	7440-36-0
Mg	1	7439-95-4

RN 359783-14-5 HCAPLUS

CN Antimony, compd. with cobalt and magnesium (1:1:1) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Co	1	7440-48-4
Sb	1	7440-36-0
Mg	1	7439-95-4

IC ICM H01M004-38

ICS H01M004-46; H01M004-48; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56

IT Battery anodes

Secondary batteries

(battery with nonaq. electrolyte and improved anode active material)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 7429-90-5, Aluminum, uses 7440-21-3, Silicon, uses 7440-31-5, Tin, uses 7440-36-0, Antimony, uses 7440-56-4, Germanium, uses 7440-69-9, Bismuth, uses 7723-14-0, Phosphorus, uses 11056-42-1 11118-07-3 12003-42-8 12023-54-0, Iron silicide (Fe₃Si) 12032-71-2 12059-23-3 12133-96-9 12163-59-6, Manganese silicide (Mn₃Si) 12190-79-3, Cobalt lithium oxide colio2 12423-44-8 12502-69-1 12526-54-4 12526-55-5 12534-03-1 21324-40-3, Lithium hexafluorophosphate 60968-66-3 66590-17-8 75349-09-6 99787-36-7 105110-44-9 149571-46-0 149571-49-3 359783-12-3 359783-13-4 359783-14-5 359783-15-6 359783-16-7 359783-17-8, Antimony manganese nickel phosphide (Sb_{0.8}MnNi₂P_{0.2}) 359783-18-9, Antimony cobalt manganese phosphide (Sb_{0.8}Co₂MnP_{0.2}) 359783-19-0 359783-20-3 359783-21-4, Nickel tin titanium silicide (NiSn_{0.8}TiSi_{0.2}) 359783-22-5, Cobalt tin titanium silicide (CoSn_{0.8}TiSi_{0.2}) 359783-23-6 359783-24-7 359783-25-8 359783-26-9

(battery with nonaq. electrolyte and improved anode active material)

L52 ANSWER 13 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:559987 HCAPLUS

DOCUMENT NUMBER: 135:139827

TITLE: Hydrogen-absorbing alloy and secondary battery

INVENTOR(S): Hayashida, Hirotaka; Yamamoto, Masaaki; Kitayama, Hiroshi; Inada, Shusuke; Sakai, Isao; Kono, Tatsuoki; Yoshida, Hideki; Inaba, Takamichi; Kanda, Motoya

PATENT ASSIGNEE(S): Kabushiki Kaisha Toshiba, Japan
 SOURCE: U.S., 46 pp., Cont.-in-part of U. S. Ser. No.
 200,464.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 4
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6268084	B1	20010731	US 1999-475037	19991230
JP 11162459	A	19990618	JP 1997-329213	19971128
JP 11162503	A	19990618	JP 1997-329214	19971128
JP 3825548	B2	20060927		
JP 11162460	A	19990618	JP 1997-329216	19971128
JP 3816653	B2	20060830		
US 6248475	B1	20010619	US 1998-200464	19981127
US 2001041292	A1	20011115	US 2001-871941	20010604
US 6703164	B2	20040309		
PRIORITY APPLN. INFO.:			JP 1997-329213	A 19971128
			JP 1997-329214	A 19971128
			JP 1997-329216	A 19971128
			US 1998-200464	A2 19981127
			US 1999-475037	A3 19991230

ED Entered STN: 03 Aug 2001

AB There is provided a hydrogen-absorbing alloy comprising, as a principal phase, at least one kind of phase selected from the group consisting of a first phase having a hexagonal crystal system (excluding a phase having a CaCu₅ type crystal structure) and a second phase having a rhombohedral crystal system, the hydrogen-absorbing alloy having a composition represented by the following general formula (1): R₁-a-bMg_aTbNi₂-X-Y- α M₁X₂M₂Y_{Mn60} wherein R is at least one kind of element selected from rare earth elements (which include Y), T is at least one element selected from the group consisting of Ca, Ti, Zr and Hf; M₁ is at least one element selected from the group consisting of Co and Fe; M₂ is at least one element selected from the group consisting of Al, Ga, Zn, Sn, Cu, Si, B, Nb, W, Mo, V, Cr, Ta, Li, P and S; and the atomic ratios of a, b, X, Y, α and Z are resp. a number satisfying the conditions of: 0.15 ≤ a ≤ 0.37, 0 ≤ b ≤ 0.3, 0 ≤ X ≤ 1.3, 0 ≤ Y ≤ 0.5, 0 ≤ α ≤ 0.135, and 2.5 ≤ Z ≤ 4.2.

IT 352028-85-4 352028-87-6 352028-90-1
 352028-94-5 352028-97-8 352028-99-0
 352029-06-2 352029-49-3 352029-53-9

(hydrogen-absorbing alloy and secondary battery)

RN 352028-85-4 HCAPLUS

CN Nickel alloy, base, Ni 60, La 34, Sn 3.8, Mg 1.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	60	7440-02-0
La	34	7439-91-0
Sn	3.8	7440-31-5
Mg	1.9	7439-95-4

RN 352028-87-6 HCAPLUS

CN Nickel alloy, base, Ni 57,La 21,Pr 13,Co 6.5,Mg 2.4,P 0.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	57	7440-02-0
La	21	7439-91-0
Pr	13	7440-10-0
Co	6.5	7440-48-4
Mg	2.4	7439-95-4
P	0.7	7723-14-0

RN 352028-90-1 HCAPLUS

CN Nickel alloy, base, Ni 59,La 28,Sn 8,Ce 2.8,Zn 1.5,Nd 0.5,Pr 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	28	7439-91-0
Sn	8	7440-31-5
Ce	2.8	7440-45-1
Zn	1.5	7440-66-6
Nd	0.5	7440-00-8
Pr	0.3	7440-10-0

RN 352028-94-5 HCAPLUS

CN Nickel alloy, base, Ni 44,La 27,Co 23,Ce 4.2,Mg 1.6,Ca 0.5,Si 0.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	44	7440-02-0
La	27	7439-91-0
Co	23	7440-48-4
Ce	4.2	7440-45-1
Mg	1.6	7439-95-4
Ca	0.5	7440-70-2
Si	0.3	7440-21-3

RN 352028-97-8 HCAPLUS

CN Nickel alloy, base, Ni 64,La 28,Mg 2.6,Sn 2.6,Y 1.2,Ti 1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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Ni	64	7440-02-0
La	28	7439-91-0
Mg	2.6	7439-95-4
Sn	2.6	7440-31-5
Y	1.2	7440-65-5
Ti	1	7440-32-6

RN 352028-99-0 HCAPLUS

CN Nickel alloy, base, Ni 63,La 28,Pr 6.6,Mg 2.1,Mn 0.4,Si 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	28	7439-91-0
Pr	6.6	7440-10-0
Mg	2.1	7439-95-4
Mn	0.4	7439-96-5
Si	0.1	7440-21-3

RN 352029-06-2 HCAPLUS

CN Nickel alloy, base, Ni 63,La 32,Y 2.2,Co 1.5,Mg 1.4,Sn 0.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	32	7439-91-0
Y	2.2	7440-65-5
Co	1.5	7440-48-4
Mg	1.4	7439-95-4
Sn	0.7	7440-31-5

RN 352029-49-3 HCAPLUS

CN Nickel alloy, base, Ni 63,La 28,Nd 6.6,Mg 1.8,Mn 0.4,Si 0.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	28	7439-91-0
Nd	6.6	7440-00-8
Mg	1.8	7439-95-4
Mn	0.4	7439-96-5
Si	0.1	7440-21-3

RN 352029-53-9 HCAPLUS

CN Nickel alloy, base, Ni 61,La 31,Sn 2.9,Y 2.1,Co 1.4,Mg 1.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
La	31	7439-91-0
Sn	2.9	7440-31-5
Y	2.1	7440-65-5

Co 1.4 7440-48-4
Mg 1.3 7439-95-4

IC ICM H01M004-58

INCL 429218200

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56

ST battery anode hydrogen absorbing alloy

IT Battery anodes

(hydrogen-absorbing alloy and secondary battery)

IT 1310-58-3, Potassium hydroxide, uses 1310-65-2, Lithium hydroxide

1310-73-2, Sodium hydroxide, uses 11113-74-9, Nickel hydroxide

226418-72-0 227623-56-5 348627-26-9 352028-73-0 352028-74-1

352028-75-2 352028-76-3 352028-77-4 352028-78-5 352028-79-6

352028-80-9 352028-81-0 352028-82-1 352028-83-2 352028-84-3

352028-85-4 352028-86-5 352028-87-6 352028-88-7

352028-89-8 352028-90-1 352028-91-2 352028-92-3

352028-93-4 352028-94-5 352028-95-6 352028-96-7

352028-97-8 352028-98-9 352028-99-0 352029-00-6

352029-01-7 352029-02-8 352029-03-9 352029-06-2

352029-08-4 352029-12-0 352029-15-3 352029-18-6 352029-19-7

352029-22-2 352029-24-4 352029-27-7 352029-31-3 352029-32-4

352029-34-6 352029-37-9 352029-38-0 352029-39-1 352029-41-5

352029-42-6 352029-43-7 352029-44-8 352029-46-0 352029-47-1

352029-48-2 352029-49-3 352029-50-6 352029-51-7

352029-52-8 352029-53-9 352029-54-0 352029-58-4

352029-60-8 352029-61-9 352029-62-0 352029-63-1 352029-65-3

352029-67-5 352029-68-6 352029-69-7 352029-71-1 352029-72-2

352029-73-3 352029-74-4 352029-75-5 352029-77-7 352029-78-8

352029-80-2 352029-81-3

(hydrogen-absorbing alloy and secondary battery)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L52 ANSWER 14 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:133987 HCAPLUS

DOCUMENT NUMBER: 134:181067

TITLE: Secondary lithium batteries capable of charging
and discharging at high voltage

INVENTOR(S): Honbo, Akiko; Goto, Akihiro; Muranaka, Yasushi

PATENT ASSIGNEE(S): Hitachi, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001052704	A	20010223	JP 1999-226078	19990810

PRIORITY APPLN. INFO.: JP 1999-226078 19990810

ED Entered STN: 23 Feb 2001

AB The battery comprises an anode, Li salt-containing nonaq.
electrolyte, and a cathode, consisting of ≥ 2 phases having
different lattice constant and having hexagonal

and/or monoclinic crystal structure or layered and/or zigzagged crystal structure. The cathode active material may have composition formula $\text{Li}_w\text{AvQxCoyO}_2$ ($\text{A} = \text{Ge}, \text{Y}, \text{Si}, \text{Zr}, \text{and/or Ti}$; $\text{Q} = \text{Ni}, \text{Mn}, \text{Fe}, \text{and/or Al}$; $0 \leq w \leq 1.2$; $0.02 \leq v \leq 0.125$; $0.01 \leq x \leq 0.175$; 0.01

$\leq x/y \leq 0.25$). The cathode active materials may also contain LiAO_2 , Li_2AO_3 , and/or AO_2 ($\text{A} = \text{Ge and/or Ti}$) as byproducts. The batteries are suitable for use in personal computers, handy phones, memory cards, liquid crystal displays, domestic electronic appliances, vehicles, medical apparatus, power storage systems, etc.

IT 326895-25-4P 326895-28-7P

(secondary batteries with lithium mixed oxide cathodes for charging and discharging at high voltage)

RN 326895-25-4 HCAPLUS

CN Cobalt germanium iron lithium nickel zirconium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Zr	x	7440-67-7
Ge	x	7440-56-4
Co	x	7440-48-4
Ni	x	7440-02-0
Li	x	7439-93-2
Fe	x	7439-89-6

RN 326895-28-7 HCAPLUS

CN Aluminum cobalt germanium lithium nickel yttrium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Y	x	7440-65-5
Ge	x	7440-56-4
Co	x	7440-48-4
Ni	x	7440-02-0
Li	x	7439-93-2
Al	x	7429-90-5

IC ICM H01M004-58

ICS H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 134398-49-5P, Cobalt lithium titanium oxide ($\text{Co}_{0.9}\text{LiTi}_{0.1}\text{O}_2$)
 191025-46-4P, Cobalt lithium nickel zirconium oxide 201534-12-5P,
 Lithium manganese zirconium oxide 244304-18-5P, Cobalt lithium
 nickel silicon oxide 244304-20-9P, Cobalt lithium nickel titanium
 oxide 244304-22-1P, Cobalt germanium lithium nickel oxide
 244304-23-2P, Cobalt lithium nickel yttrium oxide 326894-99-9P,
 Cobalt germanium lithium oxide ($\text{Co}_{0.9}\text{Ge}_{0.1}\text{LiO}_2$) 326895-01-6P
 326895-03-8P 326895-07-2P 326895-11-8P, Cobalt lithium yttrium
 oxide 326895-13-0P, Iron lithium silicon oxide 326895-14-1P,
 Cobalt germanium lithium manganese oxide 326895-16-3P, Cobalt
 germanium iron lithium oxide 326895-18-5P, Aluminum cobalt germanium
 lithium oxide 326895-20-9P 326895-22-1P 326895-24-3P
 326895-25-4P 326895-26-5P 326895-27-6P

326895-28-7P 326895-29-8P Germanium lithium manganese
 nickel oxide 326895-30-1P 326895-31-2P 326895-32-3P
 326895-33-4P 326895-34-5P 326895-35-6P 326895-36-7P
 326895-37-8P 326895-38-9P 326895-39-0P 326895-40-3P
 326895-41-4P

(secondary batteries with lithium mixed oxide cathodes for charging
 and discharging at high voltage)

L52 ANSWER 15 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:57502 HCAPLUS

DOCUMENT NUMBER: 134:165606

TITLE: Structure and properties of the MlNi5 system with
 tin substitution

AUTHOR(S): Lin, Qin; Zhao, Shuang; Zhu, Dajian; Chen, Ning

CORPORATE SOURCE: Department of Physical Chemistry, University of
 Science and Technology Beijing, Beijing, 100083,
 Peop. Rep. China

SOURCE: Solid State Ionics (2000), 136-137,
 663-666

CODEN: SSIOD3; ISSN: 0167-2738

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 24 Jan 2001

AB The hydriding performance, electrochem. properties and structure of
 MlNi5-xSnx (x = 0-0.5) and LaNi5-xSnx (x = 0-0.2) hydrogen storage
 alloys were investigated by pressure-composition isotherms, electrochem.
 measurements, XRD and atomic parameters. The substitution of Ni by Sn
 leads to an increase of the unit cell volume and decrease of the
 electron concentration. The unit cell volume increase decreases the plateau
 pressure and improves the hydride stability and charge-discharge cycle
 life. The main factor which influences the standard enthalpy of the
 hydriding reaction is the number of the outer orbit electrons and not the
 atomic size factor. With a small amount of tin substitution (such as Sn =
 0.2), the cycle life increases by 52% (0.5C) and 42% (1.0C), but maximum
 discharge capacity decreases only by 3.0 and 3.5%, resp.

IT 142366-54-9 158146-17-9 325709-07-7
 325709-12-4 325709-17-9 325709-21-5
 325709-26-0

(structure and properties of hydrogen storage MlNi5 system with tin
 substitution)

RN 142366-54-9 HCAPLUS

CN Nickel alloy, base, Ni 66, La 32, Sn 2.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	66	7440-02-0
La	32	7439-91-0
Sn	2.7	7440-31-5

RN 158146-17-9 HCAPLUS

CN Lanthanum, compd. with nickel and tin (1:4.8:0.2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Sn	0.2	7440-31-5
Ni	4.8	7440-02-0
La	1	7439-91-0

RN 325709-07-7 HCAPLUS
 CN Nickel alloy, base, Ni 65,La 25,Nd 6.2,Sn 2.7,Pr 0.2,Ce 0.1 (9CI) (CA
 INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	65	7440-02-0
La	25	7439-91-0
Nd	6.2	7440-00-8
Sn	2.7	7440-31-5
Pr	0.2	7440-10-0
Ce	0.1	7440-45-1

RN 325709-12-4 HCAPLUS
 CN Nickel alloy, base, Ni 63,La 25,Nd 6.1,Sn 5.3,Pr 0.2,Ce 0.1 (9CI) (CA
 INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	25	7439-91-0
Nd	6.1	7440-00-8
Sn	5.3	7440-31-5
Pr	0.2	7440-10-0
Ce	0.1	7440-45-1

RN 325709-17-9 HCAPLUS
 CN Nickel alloy, base, Ni 61,La 25,Sn 7.9,Nd 6,Ce 0.1,Pr 0.1 (9CI) (CA
 INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
La	25	7439-91-0
Sn	7.9	7440-31-5
Nd	6	7440-00-8
Ce	0.1	7440-45-1
Pr	0.1	7440-10-0

RN 325709-21-5 HCAPLUS
 CN Nickel alloy, base, Ni 59,La 24,Sn 10,Nd 5.9,Ce 0.1,Pr 0.1 (9CI) (CA
 INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	59	7440-02-0
La	24	7439-91-0
Sn	10	7440-31-5
Nd	5.9	7440-00-8
Ce	0.1	7440-45-1
Pr	0.1	7440-10-0

RN 325709-26-0 HCAPLUS
 CN Nickel alloy, base, Ni 57,La 24,Sn 13,Nd 5.9,Ce 0.1,Pr 0.1 (9CI) (CA
 INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	57	7440-02-0
La	24	7439-91-0
Sn	13	7440-31-5
Nd	5.9	7440-00-8
Ce	0.1	7440-45-1
Pr	0.1	7440-10-0

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56, 72

ST hydrogen storage alloy nickel lanthanum tin; battery anode
hydrogen storage alloy

IT Battery anodes

Crystal structure
Hydriding

Secondary batteries

(structure and properties of hydrogen storage MlNi5 system with tin substitution)

IT 142366-54-9 158146-17-9 325709-03-3

325709-07-7 325709-12-4 325709-17-9

325709-21-5 325709-26-0

(structure and properties of hydrogen storage MlNi5 system with tin substitution)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L52 ANSWER 16 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:592487 HCAPLUS

DOCUMENT NUMBER: 133:195997

TITLE: Hydrogene storage alloy electrode and method for
manufacturing the same

INVENTOR(S): Tsuji, Yoichiro; Yamamoto, Osamu; Toyoguchi,
Yoshinori; Matsuda, Hiromu

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 13 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1030392	A2	20000823	EP 2000-301151	20000215
			<--	
EP 1030392	A3	20020731		
EP 1030392	B1	20050817		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 6309779	B1	20011030	US 2000-502537	20000211
			<--	
CN 1264184	A	20000823	CN 2000-102334	20000217
			<--	
CN 1120534	B	20030903	CN 2000-102334	20000217
			<--	

PRIORITY APPLN. INFO.:

JP 1999-38376

A 19990217

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ED Entered STN: 25 Aug 2000

AB A hydrogen storage alloy electrode having a high capacity and excellent cycle characteristics is made from particulate active material comprising a hydrogen storage alloy of body-centered cubic crystal structure or body-centered tetragonal crystal structure. The hydrogen storage alloy is represented by the general formula $Ti a M1 b Cr c M2 d L e$, wherein M1 is at least one element selected from the group consisting of Nb and Mo; M2 is at least one element selected from the group consisting of Mn, Fe, Co, Cu, V, Zn, Zr, Ag, Hf, Ta, W, Al, Si, C, N, P and B; L is at least one element selected from the group consisting of rare-earth elements and Y; $0.2 \leq a \leq 0.7$; $0.01 \leq b \leq 0.4$; $0.1 \leq c \leq 0.7$; $0 \leq d \leq 0.3$; $0 \leq e \leq 0.03$; and $a+b+c+d+e = 1.0$, and the particulate active material having a Ti-Ni system alloy phase in the surface portion thereof.

IT 288847-91-6P 288847-94-9P 288848-01-1P

288848-02-2P 288848-03-3P 288848-05-5P

(hydrogene storage alloy electrode and method for its manufacturing)

RN 288847-91-6 HCAPLUS

CN Titanium alloy, base, Ti 45,Cr 34,Mo 13,La 5.2,Si 3.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	45	7440-32-6
Cr	34	7440-47-3
Mo	13	7439-98-7
La	5.2	7439-91-0
Si	3.2	7440-21-3

RN 288847-94-9 HCAPLUS

CN Titanium alloy, base, Ti 43,Cr 33,Mo 17,La 5,P 1.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	43	7440-32-6
Cr	33	7440-47-3
Mo	17	7439-98-7
La	5	7439-91-0
P	1.7	7723-14-0

RN 288848-01-1 HCAPLUS

CN Titanium alloy, base, Ti 40,Cr 32,Mo 18,La 5.2,Si 5.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	40	7440-32-6
Cr	32	7440-47-3
Mo	18	7439-98-7
La	5.2	7439-91-0
Si	5.2	7440-21-3

RN 288848-02-2 HCAPLUS

CN Titanium alloy, base, Ti 39,Cr 31,Mo 17,Fe 5.1,La 5,Si 2.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	39	7440-32-6
Cr	31	7440-47-3
Mo	17	7439-98-7
Fe	5.1	7439-89-6
La	5	7439-91-0
Si	2.5	7440-21-3

RN 288848-03-3 HCAPLUS

CN Titanium alloy, base, Ti 40,Cr 32,Mo 18,La 5.1,Si 4.1,Fe 2.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	40	7440-32-6
Cr	32	7440-47-3
Mo	18	7439-98-7
La	5.1	7439-91-0
Si	4.1	7440-21-3
Fe	2.1	7439-89-6

RN 288848-05-5 HCAPLUS

CN Titanium alloy, base, Ti 38,Cr 31,Mo 17,Fe 8,La 5,Si 1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	38	7440-32-6
Cr	31	7440-47-3
Mo	17	7439-98-7
Fe	8	7439-89-6
La	5	7439-91-0
Si	1	7440-21-3

IC ICM H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56

ST battery anode hydrogen storage alloy

IT Battery anodes

Mechanical alloying

Mechanochemical reaction

(hydrogene storage alloy electrode and method for its manufacturing)

IT 288847-66-5P 288847-67-6P 288847-68-7P 288847-69-8P
 288847-70-1P 288847-71-2P 288847-72-3P 288847-73-4P
 288847-74-5P 288847-75-6P 288847-77-8P 288847-79-0P
 288847-80-3P 288847-81-4P 288847-82-5P 288847-83-6P
 288847-84-7P 288847-85-8P 288847-86-9P 288847-87-0P
 288847-88-1P 288847-89-2P 288847-90-5P 288847-91-6P
 288847-92-7P 288847-93-8P 288847-94-9P 288847-95-0P
 288847-96-1P 288847-97-2P 288847-98-3P 288847-99-4P
 288848-00-0P 288848-01-1P 288848-02-2P
 288848-03-3P 288848-05-5P

(hydrogene storage alloy electrode and method for its manufacturing)

L52 ANSWER 17 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:6020 HCAPLUS

DOCUMENT NUMBER: 132:95671

TITLE: Advanced nanocrystalline Zr-based AB₂ hydrogen storage electrode materials for NiMH EV batteries

AUTHOR(S): Chen, L.; Wu, F.; Tong, M.; Chen, D. M.; Long, R. B.; Shang, Z. Q.; Liu, H.; Sun, W. S.; Yang, K.; Wang, L. B.; Li, Y. Y.

CORPORATE SOURCE: Institute of Metal Research, Chinese Academy of Sciences, Shenyang, 110015, Peop. Rep. China

SOURCE: Journal of Alloys and Compounds (1999), 293-295, 508-520

CODEN: JALCEU; ISSN: 0925-8388

PUBLISHER: Elsevier Science S.A.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 04 Jan 2000

AB The metallurgical microstructure, **crystal-structure** and electrochem. properties of Laves phase Zr-V-Mn-Ni system alloys (modified with Ti, Co, Sn, etc.) were investigated systematically in the present paper. Conventional polycryst. Zr-based alloys, which consist of cubic C15 Laves phase, hexagonal C14 Laves phase and non-Laves phase (such as Zr₇Ni₁₀, Zr₉Ni₁₁, Zr(NiMn)Sn_{0.35}), show the highest discharge capacity of 342 mAh/g (at 60 mA/g charge-discharge current), which decreases by 7.8% after 300 cycles. Amorphous phase alloys in melt-spun alloys exhibit poor electrochem. properties. Advanced nanocryst. C15-Laves single-phase alloys were prepared by completely crystallizing the melt-spun amorphous Zr_{1-x}Ti_x[(NiVMnCo)_{1-y}Sn_y]_{2+α} alloys. These alloys have a special microstructure composed of high-d. interface phase and random-oriented grains varying from several nanometers to several dozens of nanometers. It was found that these materials had high discharge capacity (the maximum capacity is up to 379 mAh g⁻¹) and long cycle life (the capacity only decreases 3% after 300 cycles). The maximum discharge capacities were found in the metallurgical microstructure and **crystal-structure** in Zr-based AB₂ alloys. The maximum discharge capacity increases in regular nanocryst./C15-Laves single-phase>polycryst./multi-phase (Laves and non-Laves)>comorphous state/C15-Laves single-phase. It was shown that the complete crystallization method from amorphous solids is an effective way to greatly improve the electrochem. performance of Zr-based AB₂ hydrogen storage electrode materials, which is not only significant for academic research but also valuable for practical applications in the NiMH battery system for pure elec. vehicles (PEV) and hybrid elec. vehicles (HEV).

IT 255065-30-6 255065-31-7

(nanocryst. Zr-based AB₂ hydrogen storage electrode materials for NiMH EV batteries)

RN 255065-30-6 HCAPLUS

CN Zirconium alloy, base, Zr 45, Ni 25, Mn 17, V 7.5, Co 3.5, Sn 1.3 (9CI)
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Zr	45	7440-67-7
Ni	25	7440-02-0
Mn	17	7439-96-5
V	7.5	7440-62-2

Co 3.5 7440-48-4
Sn 1.3 7440-31-5

RN 255065-31-7 HCAPLUS

CN Zirconium alloy, base, Zr 43, Ni 27, Mn 16, V 7.3, Co 3.8, Sn 2.5 (9CI)
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Zr	43	7440-67-7
Ni	27	7440-02-0
Mn	16	7439-96-5
V	7.3	7440-62-2
Co	3.8	7440-48-4
Sn	2.5	7440-31-5

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

Section cross-reference(s): 56, 72

IT Battery anodes

Crystal structure

Crystallinity

Secondary batteries

(nanocryst. Zr-based AB₂ hydrogen storage electrode materials for
NiMH EV batteries)

IT 255065-29-3 255065-30-6 255065-31-7 255065-32-8

(nanocryst. Zr-based AB₂ hydrogen storage electrode materials for
NiMH EV batteries)

REFERENCE COUNT: 25: THERE ARE 25 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L52 ANSWER 18 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:5945 HCAPLUS

DOCUMENT NUMBER: 132:80850

TITLE: Crystal structure and protium
absorption properties of La-rich La(Ni,M)_x
(x=3-4.7) (M=Al, Co, Mn, Si) melt-spun ribbons
AUTHOR(S): Okada, M.; Kuriwa, T.; Tamura, T.; Kamegawa, A.;
Takamura, H.

CORPORATE SOURCE: Department of Materials Science, Graduate School
of Engineering, Tohoku University, Sendai,
980-8579, Japan

SOURCE: Journal of Alloys and Compounds (1999),
293-295, 130-134
CODEN: JALCEU; ISSN: 0925-8388

PUBLISHER: Elsevier Science S.A.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 04 Jan 2000

AB The present study describes the rapid quenching effects on the
solid-solution range of La(Ni, M)_x (x=3-4.7) (M=Al, Co, Mn, Si) alloys
prepared by melt-spinning and discusses their protium (hydrogen atom)
absorption properties. It is found that the single phase with CaCu₅
crystal structure extends to LaNi_{4.65} compositional
alloys. When x in LaNi_{5-x} becomes smaller, the alloy acquires better
protium absorption properties including easier activation, better
flatness of plateau region and a good hydrogen storage capacity
comparable to those of LaNi₅ homogenized sample. On adopting a

melt-spinning technique it is easy to form single phase of CaCu₅ type-structure for La-rich non-stoichiometric La-Ni-M alloys such as La(Ni,M)_x (x=3-4.7) (M=Al, Mn, Si) alloys. The readiness of forming a single phase CaCu₅ type-structure in melt-spun La-Ni-M alloys is in order of Al>Si>Mn>Co. The phases formed and protium absorption properties of La-rich LaNi_{4.5}M_{0.2} melt-spun alloys are studied. It was found that LaNi_{4.5}M_{0.2} alloys had better protium absorption properties such as easier activation than the LaNi_{4.65} binary alloy and as good hydrogen storage capacity as that of homogenized LaNi₅.

IT 253882-95-0 253882-96-1 253882-97-2

(**crystal structure** and protium absorption
properties of La-rich La(Ni,M)_x (x=3-4.7) (M=Al, Co, Mn, Si)
melt-spun ribbons)

RN 253882-95-0 HCAPLUS

CN Nickel alloy, base, Ni 63,La 33,Ge 3.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	33	7439-91-0
Ge	3.5	7440-56-4

RN 253882-96-1 HCAPLUS

CN Nickel alloy, base, Ni 65,La 34,Si 1.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	65	7440-02-0
La	34	7439-91-0
Si	1.4	7440-21-3

RN 253882-97-2 HCAPLUS

CN Nickel alloy, base, Ni 62,La 33,Sn 5.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	33	7439-91-0
Sn	5.6	7440-31-5

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

Section cross-reference(s): 56

IT **Battery anodes**

Crystal structure-property relationship

(**crystal structure** and protium absorption
properties of La-rich La(Ni,M)_x (x=3-4.7) (M=Al, Co, Mn, Si)
melt-spun ribbons)

IT Casting process

(spin; **crystal structure** and protium absorption
properties of La-rich La(Ni,M)_x (x=3-4.7) (M=Al, Co, Mn, Si)
melt-spun ribbons)

IT 1333-74-0, Protium, processes

(anode alloys for storage of; **crystal structure**
and protium absorption properties of La-rich La(Ni,M)_x (x=3-4.7)
(M=Al, Co, Mn, Si) melt-spun ribbons)

IT 62651-39-2 83899-54-1 83899-55-2 209053-17-8 217966-60-4

253882-86-9 253882-87-0 253882-88-1 253882-89-2 253882-90-5
 253882-91-6 253882-92-7 253882-93-8 253882-94-9
 253882-95-0 253882-96-1 253882-97-2
 253882-98-3 253882-99-4

(crystal structure and protium absorption
 properties of La-rich La(Ni,M)x (x=3-4.7) (M=Al, Co, Mn, Si)
 melt-spun ribbons)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L52 ANSWER 19 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:654950 HCAPLUS

DOCUMENT NUMBER: 132:38047

TITLE: Non-stoichiometric AB5 type alloys and their
 properties as metal hydride electrodes

AUTHOR(S): Vogt, T.; Reilly, J. J.; Johnson, J. R.; Adzic, G.
 D.; McBreen, J.

CORPORATE SOURCE: Physics Department, Brookhaven National
 Laboratory, Upton, NY, 11973, USA

SOURCE: Materials Science Forum (1999),
 315-317(Rare Earths '98), 94-104
 CODEN: MSFOEP; ISSN: 0255-5476

PUBLISHER: Trans Tech Publications Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 14 Oct 1999

AB Nickel-metal hydride batteries (NiMH) are replacing nickel-cadmium
 batteries (NiCd) due to their higher energy d. and benign
 environmental impact. Furthermore, they are the first generation
 batteries for hybrid and elec. vehicles. Current AB5 electrodes
 necessarily contain expensive cobalt to obtain a reasonable cycle
 life. As a first step to eliminate Co as an alloy component the
 structure of LaNi_{3.55}Co_{0.75}Mn_{0.4}Al_{0.3} was determined In order to
 definitively determine the site preference of cobalt a null scattering Ni
 alloy was prepared using appropriate Ni isotopes. In addition a new class
 of cobalt free non-stoichiometric La(NiSn)_{5+x} alloys was identified
 which have cycle lives and storage capacities comparable to com.
 alloys containing 10 weight% cobalt.

IT 175553-28-3 220936-20-9 220936-21-0
 250330-13-3 250330-14-4 250330-68-8

(crystal structure of non-stoichiometric AB5
 type alloys and their properties as metal hydride electrodes for
 secondary batteries)

RN 175553-28-3 HCAPLUS

CN Lanthanum, compd. with nickel and tin (1:4.7:0.3) (9CI) (CA INDEX
 NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
Sn	0.3	7440-31-5
Ni	4.7	7440-02-0
La	1	7439-91-0

RN 220936-20-9 HCAPLUS

CN Nickel alloy, base, Ni 62,La 29,Sn 8.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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=====+=====+=====
Ni          62          7440-02-0
La          29          7439-91-0
Sn          8.2         7440-31-5

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RN 220936-21-0 HCAPLUS

CN Nickel alloy, base, Ni 62,La 30,Sn 8.1 (9CI) (CA INDEX NAME)

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Component    Component    Component
              Percent      Registry Number
=====+=====+=====
Ni          62          7440-02-0
La          30          7439-91-0
Sn          8.1         7440-31-5

```

RN 250330-13-3 HCAPLUS

CN Lanthanum, compd. with nickel and tin (0.96:4.78:0.31) (9CI) (CA INDEX NAME)

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Component      |          Ratio          | Component
                  |                          | Registry Number
=====+=====+=====
Sn              |          0.31           | 7440-31-5
Ni              |          4.78           | 7440-02-0
La              |          0.96           | 7439-91-0

```

RN 250330-14-4 HCAPLUS

CN Lanthanum, compd. with nickel and tin (0.98:4.71:0.31) (9CI) (CA INDEX NAME)

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Component      |          Ratio          | Component
                  |                          | Registry Number
=====+=====+=====
Sn              |          0.31           | 7440-31-5
Ni              |          4.71           | 7440-02-0
La              |          0.98           | 7439-91-0

```

RN 250330-68-8 HCAPLUS

CN Lanthanum, compd. with nickel and tin (0.98:4.74:0.31) (9CI) (CA INDEX NAME)

```

Component      |          Ratio          | Component
                  |                          | Registry Number
=====+=====+=====
Sn              |          0.31           | 7440-31-5
Ni              |          4.74           | 7440-02-0
La              |          0.98           | 7439-91-0

```

IT 103662-87-9

(non-stoichiometric AB5 type alloys and their properties as metal hydride electrodes for secondary batteries)

RN 103662-87-9 HCAPLUS

CN Nickel alloy, base, Ni 61,La 31,Sn 7.9 (9CI) (CA INDEX NAME)

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Component    Component    Component
              Percent      Registry Number
=====+=====+=====
Ni          61          7440-02-0
La          31          7439-91-0
Sn          7.9         7440-31-5

```

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 56, 75

ST crystal structure cobalt free secondary battery electrode

IT Battery electrodes
 Crystal structure
 Secondary batteries
 (crystal structure of non-stoichiometric AB5 type alloys and their properties as metal hydride electrodes for secondary batteries)

IT 173355-11-8 175553-28-3 220936-20-9
 220936-21-0 250330-13-3 250330-14-4
 250330-68-8
 (crystal structure of non-stoichiometric AB5 type alloys and their properties as metal hydride electrodes for secondary batteries)

IT 103662-87-9 173355-11-8 252268-00-1
 (non-stoichiometric AB5 type alloys and their properties as metal hydride electrodes for secondary batteries)

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 20 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:439217 HCAPLUS

DOCUMENT NUMBER: 131:76196

TITLE: Hydrogen-absorbing alloy of ultra high capacity for electrode of secondary battery

INVENTOR(S): Lee, Jai-young; Lee, Han-ho; Lee, Ki-young; Jung, Jae-han; Kim, Dong-myung; Yu, Ji-sang

PATENT ASSIGNEE(S): Korea Advanced Institute of Science and Technology, S. Korea

SOURCE: U.S., 9 pp.
 CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5922146	A	19990713	US 1996-761440	19961206
			<--	
KR 208652	B1	19990715	KR 1995-47762	19951208
			<--	
			KR 1995-47762	A 19951208
			<--	

PRIORITY APPLN. INFO.: KR 1995-47762 A 19951208

ED Entered STN: 19 Jul 1999

AB A hydrogen-absorbing Ti alloy system is represented as the following general formula: TiAZrBVCMnDNiEMF , where M represents at least one metal selected from the group consisting of Cr, Co, Fe, Cu, Al, Si, Hf, Nb, Mo, and RE (where RE represents at least one metal selected from the group of rare earth elements consisting of La, Ce, Pr, Nd, and Sm); A, B, C, D, E, and F have atomic ratios ranging $0.2 \leq A \leq 0.35$, $0.03 \leq B \leq 0.15$, $0.15 \leq C \leq 0.4$, $0.8 \leq D \leq 0.2$, $0.13 \leq E \leq 0.35$, and $0 \leq F \leq 0.1$, resp, with the proviso that $A+B+C+D+E+F = 1$ and $A+B \leq 0.45$. The H absorbing Ti

alloy system of the invention, has similar mol. weight of 50-65 g/mol, C14-hexagonal crystalline structure of single phase, lattice consts. of $a = 4.902\text{-}5.004 \text{ \AA}$ and $c = 7.972\text{-}8.168 \text{ \AA}$ ultrahigh discharge capacity of 400 mA-h/g or more, which can be employed as an anode material of a Ni-MH secondary battery.

IT 228549-90-4

(hydrogen-absorbing alloy of ultra high capacity for electrode of secondary battery)

RN 228549-90-4 HCAPLUS

CN Nickel alloy, base, Ni 29,Ti 24,V 20,Mn 14,Zr 12,Si 2.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	29	7440-02-0
Ti	24	7440-32-6
V	20	7440-62-2
Mn	14	7439-96-5
Zr	12	7440-67-7
Si	2.1	7440-21-3

IC ICM C22C030-00

INCL 148442000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56

ST battery anode hydrogen absorbing alloy; titanium hydrogen absorbing alloy battery anode

IT Battery anodes

Secondary batteries

(hydrogen-absorbing alloy of ultra high capacity for electrode of secondary battery)

IT	178992-35-3	193818-91-6	228549-75-5	228549-76-6	228549-77-7
	228549-78-8	228549-79-9	228549-80-2	228549-81-3	228549-82-4
	228549-83-5	228549-84-6	228549-85-7	228549-86-8	228549-87-9
	228549-89-1	228549-90-4	228549-91-5	228549-92-6	
	228549-93-7	228549-94-8	228549-95-9	228549-96-0	228549-97-1
	228549-98-2	228549-99-3			

(hydrogen-absorbing alloy of ultra high capacity for electrode of secondary battery)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 21 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:311388 HCAPLUS

DOCUMENT NUMBER: 130:314419

TITLE: Metal hydride cells for high rate/low temperature performance

INVENTOR(S): Singh, Deepika B.; Zhang, Lianying; Klein, Michael R.; Puglisi, Vince; Demouilly, Thomas R.; Prakash, Jai

PATENT ASSIGNEE(S): Eveready Battery Company, Inc., USA

SOURCE: PCT Int. Appl., 38 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9923709	A2	19990514	WO 1998-US23320	19981102
<--				
WO 9923709	A3	19990708		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 2001009740	A1	20010726	US 1998-118660	19980717
<--				
US 6287724	B2	20010911		
AU 9912993	A	19990524	AU 1999-12993	19981102
<--				
EP 1044476	A2	20001018	EP 1998-956474	19981102
<--				
EP 1044476	B1	20020724		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2001522132	T	20011113	JP 2000-519475	19981102
<--				
AT 221255	T	20020815	AT 1998-956474	19981102
<--				
TW 412875	B	20001121	TW 1998-87118269	19981113
<--				
PRIORITY APPLN. INFO.:			US 1997-64681P	P 19971103
<--				
			US 1997-64682P	P 19971103
<--				
			US 1998-118660	A 19980717
<--				
			WO 1998-US23320	W 19981102
<--				

ED Entered STN: 21 May 1999

AB A metal hydride rechargeable cell, such as a nickel hydride cell, is provided that discharges during a test discharge or initial operational discharge at a rate of 8-C to 18-C and a cell temperature of 0° wherein the voltage remains above 0.2 V during the half of the discharge curve. The cell comprises a neg. electrode of hydrogen storage alloy material having a particle size volume distribution whose d(50) value does not exceed $2(2D_{ht})^{1/2}$, where D_h is the hydrogen diffusion coefficient for the alloy at 0° and t is a time period from about 200 to about 450 s. A process for manufacturing the cell according to the present invention involves an activation protocol comprising at least one formation cycle, a heat treating step, and a cycling step. The process avoids unnecessary processing of the metal alloy material prior to incorporation into the neg. electrode.

IT 103662-87-9

(metal hydride batteries for high rate/low temperature performance)

RN 103662-87-9 HCAPLUS

CN Nickel alloy, base, Ni 61, La 31, Sn 7.9 (9CI) (CA INDEX NAME)

Component Component Component

	Percent	Registry Number
Ni	61	7440-02-0
La	31	7439-91-0
Sn	7.9	7440-31-5

IC ICM H01M
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 56
 IT Battery anodes
 Secondary batteries
 (metal hydride batteries for high rate/low temperature performance)
 IT 11113-74-9, Nickel hydroxide 103662-87-9 132543-58-9
 156186-74-2
 (metal hydride batteries for high rate/low temperature performance)

L52 ANSWER 22 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:172058 HCAPLUS

DOCUMENT NUMBER: 130:211692

TITLE: Crystal structure of nonstoichiometric La(Ni,Sn)5+x alloys and their properties as metal hydride electrodes
 AUTHOR(S): Vogt, T.; Reilly, J. J.; Johnson, J. R.; Adzic, G. D.; McBreen, J.

CORPORATE SOURCE: Department of Physics, Brookhaven National Laboratory, Upton, NY, 11973-5000, USA

SOURCE: Electrochemical and Solid-State Letters (1999), 2(3), 111-114
 CODEN: ESLEF6; ISSN: 1099-0062

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 16 Mar 1999

AB Cobalt-free La(Ni,Sn)5+x alloys have been identified as low-cost, corrosion-resistant anodes for nickel-metal hydride batteries. The structures of these alloys are similar to nonstoichiometric La(Ni,Cu)5+x compds.; i.e., they retain the P6/mmm space group while Ni dumbbells occupy La sites. Anodes fabricated from some of these novel alloys have storage capacities and cycle lives equivalent to those made from com. battery-grade AB5 alloys.

IT 103662-87-9 220936-20-9 220936-21-0
 220936-22-1

(crystal structure of nonstoichiometric lanthanum-nickel-tin alloys and their properties as hydrogen-absorbing anodes for batteries)

RN 103662-87-9 HCAPLUS

CN Nickel alloy, base, Ni 61,La 31,Sn 7.9 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
La	31	7439-91-0
Sn	7.9	7440-31-5

RN 220936-20-9 HCAPLUS

CN Nickel alloy, base, Ni 62,La 29,Sn 8.2 (9CI) (CA INDEX NAME)

Component	Component	Component
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	Percent	Registry Number
Ni	62	7440-02-0
La	29	7439-91-0
Sn	8.2	7440-31-5

RN 220936-21-0 HCAPLUS

CN Nickel alloy, base, Ni 62,La 30,Sn 8.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	62	7440-02-0
La	30	7439-91-0
Sn	8.1	7440-31-5

RN 220936-22-1 HCAPLUS

CN Nickel alloy, base, Ni 61,La 30,Sn 8.1 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	61	7440-02-0
La	30	7439-91-0
Sn	8.1	7440-31-5

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56

ST lanthanum nickel tin nonstoichiometric alloy **crystal structure**; hydrogen absorbing lanthanum nickel tin alloy anode battery

IT Battery anodes

(crystal structure of nonstoichiometric lanthanum-nickel-tin alloys and their properties as hydrogen-absorbing anodes for batteries)

IT 184171-13-9

(crystal structure of aluminum-lanthanum-manganese-nickel alloy and its property as hydrogen-absorbing anodes for batteries)

IT 181147-99-9

(crystal structure of misch metal-nickel-based alloy and its property as hydrogen-absorbing anodes for batteries)

IT 103662-87-9 220936-20-9 220936-21-0 220936-22-1

(crystal structure of nonstoichiometric lanthanum-nickel-tin alloys and their properties as hydrogen-absorbing anodes for batteries)

IT 1333-74-0, Hydrogen, uses

(crystal structure of nonstoichiometric lanthanum-nickel-tin alloys and their properties as hydrogen-absorbing anodes for batteries)

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 23 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:72205 HCAPLUS

DOCUMENT NUMBER: 130:170706

TITLE: Lithium mixed oxide cathode active materials,

cathodes using the materials, and lithium
 batteries using them
 INVENTOR(S): Amine, Khalil
 PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 22 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11025983	A	19990129	JP 1997-215424	19970704
US 6319632	B1	20011120	US 1999-448504	19991124
US 2002039681	A1	20020404	US 2001-955906	20010920
PRIORITY APPLN. INFO.:				
			JP 1997-215424	A 19970704
			US 1999-448504	A3 19991124

ED Entered STN: 03 Feb 1999

AB The active materials comprise $\text{LiM}_{11}\text{-xM}_2\text{xPO}_4$ ($\text{M}_1 = \text{Co, Ni, Mn}$; $\text{M}_2 = \text{Mg, Fe, Ni, Co, Mn, Zn, Ge, Cu, Cr}$; $x = 0\text{-}0.5$) having the olivine structure. The materials, which may have a rhombic structure, may be (1) LiMnPO_4 with lattice parameters of $a = 6.11 \pm 0.50 \text{ \AA}$, $b = 10.46 \pm 0.50 \text{ \AA}$, and $c = 4.73 \pm 0.50 \text{ \AA}$, (2) LiNiPO_4 with lattice parameters of $a = 5.86 \pm 0.50 \text{ \AA}$, $b = 10.07 \pm 0.20 \text{ \AA}$, $c = 4.68 \pm 0.50 \text{ \AA}$, or (3) LiCoPO_4 having lattice parameters of $a = 5.92 \pm 0.50 \text{ \AA}$, $b = 10.21 \pm 0.50 \text{ \AA}$, and $c = 4.70 \pm 0.50 \text{ \AA}$. Cathodes using the materials and batteries using the cathodes, electrolyte solns., and anode active materials containing Li, Li alloys, Li_xSnO_2 , and C materials are also claimed. Li batteries with high energy d. and high voltage are obtained.

IT 220333-99-3P, Lithium magnesium manganese phosphate ($\text{LiMg}_{0.5}\text{Mn}_{0.5}\text{-1(PO}_4\text{)}$) 220334-06-5P, Lithium magnesium nickel phosphate ($\text{LiMg}_{0.5}\text{Ni}_{0.5}\text{-1(PO}_4\text{)}$)
 (Li mixed oxides of olivine structure as cathode active materials for high-energy-d. and high-voltage Li batteries)

RN 220333-99-3 HCAPLUS

CN Lithium magnesium manganese phosphate ($\text{LiMg}_{0.5}\text{Mn}_{0.5}\text{-1(PO}_4\text{)}$) (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mn	0.5 - 1	7439-96-5
Mg	0 - 0.5	7439-95-4
Li	1	7439-93-2

RN 220334-06-5 HCAPLUS

CN Lithium magnesium nickel phosphate ($\text{LiMg}_{0.5}\text{Ni}_{0.5}\text{-1(PO}_4\text{)}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
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```

=====+=====+=====
O4P      |          1          |          14265-44-2
Ni       |        0.5 - 1      |          7440-02-0
Mg       |        0 - 0.5      |          7439-95-4
Li       |          1          |          7439-93-2
=====+=====+=====

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IC ICM H01M004-58
ICS C01B025-45; H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 75

IT **Battery anodes**
Battery cathodes
Battery electrolytes
(Li mixed oxides of olivine structure as cathode active materials for high-energy-d. and high-voltage Li batteries)

IT **Crystal structure types**
(rhombic; Li mixed oxides of olivine structure as cathode active materials for high-energy-d. and high-voltage Li batteries)

IT **Lithium alloy**
(anode; Li mixed oxides of olivine structure as cathode active materials for high-energy-d. and high-voltage Li batteries)

IT 13824-63-0P 13826-59-0P, Lithium manganese phosphate (LiMnPO₄)
13977-83-8P, Lithium nickel phosphate (LiNiPO₄) 220333-99-3P
, Lithium magnesium manganese phosphate (LiMg_{0.5}Mn_{0.5}-1(PO₄))
220334-01-0P, Lithium manganese nickel phosphate (LiMn_{0.5}-1Ni_{0.5}-0.5(PO₄)) 220334-04-3P, Cobalt lithium manganese phosphate (Co_{0.5}LiMn_{0.5}-1(PO₄)) 220334-05-4P, Iron lithium manganese phosphate (Fe_{0.5}LiMn_{0.5}-1(PO₄)) 220334-06-5P, Lithium magnesium nickel phosphate (LiMg_{0.5}Ni_{0.5}-1(PO₄)) 220334-07-6P, Lithium manganese nickel phosphate (LiMn_{0.5}Ni_{0.5}-1(PO₄)) 220334-08-7P, Cobalt lithium nickel phosphate (Co_{0.5}LiNi_{0.5}-1(PO₄)) 220334-09-8P, Iron lithium nickel phosphate (Fe_{0.5}LiNi_{0.5}-1(PO₄))
(Li mixed oxides of olivine structure as cathode active materials for high-energy-d. and high-voltage Li batteries)

IT 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses 160479-36-7, Lithium tin oxide
(anode; Li mixed oxides of olivine structure as cathode active materials for high-energy-d. and high-voltage Li batteries)

L52 ANSWER 24 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:788806 HCAPLUS

DOCUMENT NUMBER: 130:54835

TITLE: Hydrogen absorbing anodes and metal oxide/hydrogen batteries

INVENTOR(S): Sakai, Isao; Yoshida, Hideki; Yamamoto, Masaaki; Kanda, Motoki

PATENT ASSIGNEE(S): Toshiba Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 24 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10321223	A	19981204	JP 1997-234396	19970829
			<--	
US 6066415	A	20000523	US 1997-928033	19970911

PRIORITY APPLN. INFO.:

JP 1996-241897

A 19960912

JP 1997-64932

A 19970318

ED Entered STN: 16 Dec 1998

AB The anodes are composed of AB3 type H absorbing alloys R(Ni1-yMy) (R = Y containing rare earth elements; M = Al, Ga, Zn, Sn, Cu, Si, Ag, In, Ti, Zr, Hf, V, Nb, Ta, Cr, Fe, Mn, Mo, and/or W; 0.01 ≤ y ≤ 0.2, 2.5 ≤ z ≤ 3.25), R(Ni1-x-yM1xM2y)z (M1 = Co, Mn, and/or Fe; M2 = M other than Mn and Fe; 0.01 ≤ x ≤ 0.5), or R11-aR2a(Ni1-x-yM1xM3y)z (R1 = La, Ce, Pr, and/or Nd; R2 = Y, Er, Sm, Gd, Tb, Dy, Ho, Zr, Hf, and/or Ti; M3 = Al, Ga, Zn, Cu, Si, Sn, Ag, In, V, Nb, and/or Cr). Another type of the anodes are composed of an alloy R3(Ni1-bTb)z (R3 = rare earth, Y, Zr, Fr, and/or Ti; T = Co, Fe, Cu, Mn, Al, Si, B, Sn, Ga, Ge, Zn, and/or Ag; d ≤ 0.9, 1.5 ≤ z ≤ 4) containing a 1st phase having a CaCu5, Ce2Ni7, or Gd2Co7 type **crystalline** structure and a 2nd phase having an AlB2, CeCu2, Ni2In, CaIn2, Fe2P, and/or ThSi2 type **crystalline** structure, with Iii/Ii = 0.01-10, where Ii and Iii are the intensities of the strongest peaks of the 1st and 2nd phases on the Cu-Kα x ray diffraction pattern of the alloy.

IT 217468-69-4

(compns. and **crystalline** structures of hydrogen absorbing alloys for battery anodes)

RN 217468-69-4 HCAPLUS

CN Nickel alloy, base, Ni 53, La 42, Sn 5.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	53	7440-02-0
La	42	7439-91-0
Sn	5.6	7440-31-5

IC ICM H01M004-38

ICS C22C019-00; H01M004-24; H01M010-30

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Battery anodes

(compns. and **crystalline** structures of hydrogen absorbing alloys for battery anodes)

IT Rare earth metals, uses

(compns. and **crystalline** structures of hydrogen absorbing alloys for battery anodes)

IT 1333-74-0, Hydrogen, uses

(compns. and **crystalline** structures of hydrogen absorbing alloys for battery anodes)

IT	217468-67-2	217468-68-3	217468-69-4	217468-70-7	
	217468-71-8	217468-72-9	217468-73-0	217468-74-1	217468-75-2
	217468-76-3	217468-77-4	217468-78-5	217468-79-6	217468-80-9
	217468-81-0	217468-82-1	217468-83-2	217468-84-3	217468-85-4
	217468-87-6	217468-88-7	217468-89-8	217468-90-1	217468-91-2
	217468-92-3	217468-93-4	217468-94-5	217468-95-6	217468-96-7
	217468-97-8	217468-98-9	217468-99-0	217469-00-6	217469-01-7
	217469-02-8	217469-04-0	217469-05-1	217469-06-2	217469-07-3
	217469-08-4	217469-09-5	217469-10-8	217469-11-9	217469-12-0
	217469-13-1	217469-14-2	217469-15-3	217469-16-4	217469-17-5
	217469-18-6	217469-19-7	217469-20-0	217469-21-1	217469-22-2
	217469-23-3	217469-24-4	217469-25-5	217469-26-6	217469-27-7

217469-28-8 217469-29-9 217469-30-2 217469-31-3 217469-32-4
 217469-33-5 217469-34-6 217469-35-7 217469-36-8 217469-37-9
 217469-38-0 217469-39-1 217469-40-4 217469-41-5 217469-42-6
 217469-43-7 217469-44-8 217469-45-9 217469-46-0 217469-47-1
 217469-49-3 217469-50-6 217469-51-7 217469-52-8 217469-53-9
 217469-54-0 217473-76-2 217473-77-3

(comps. and crystalline structures of hydrogen absorbing alloys for battery anodes)

L52 ANSWER 25 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:742748 HCAPLUS

DOCUMENT NUMBER: 130:54859

TITLE: Secondary lithium batteries having metal silicide anodes and showing excellent discharge performance at high current density

INVENTOR(S): Shimamura, Harunari; Okamura, kazuhiko; Arata, Yoshiaki

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10308208	A	19981117	JP 1997-117868	19970508

PRIORITY APPLN. INFO.: JP 1997-117868 19970508

ED Entered STN: 23 Nov 1998

AB The batteries use anodes mainly containing XSi₂ (X comprises A1 and A2; A1 is ≥1 selected from Fe, Co, and Ni; A2 is ≥1 selected from Mg, Ca, Sr, and Ba). By substituting a part (preferably 0.5-31 weight%) of transition metals in transition metal silicides (MSi₂) with alkaline earth metals which have larger ionic radius than those of the transition metals, Li⁺ path in the silicide crystals is widened, and as the results, the batteries obtain improved discharge characteristics at high c.d.

IT 217077-72-0P, Iron magnesium silicide (Fe_{0.99}Mg_{0.01}Si₂)
 217077-73-1P, Calcium iron silicide (Ca_{0.01}Fe_{0.99}Si₂)
 217077-75-3P, Iron strontium silicide (Fe_{0.99}Sr_{0.01}Si₂)
 217077-77-5P, Barium iron silicide (Ba_{0.01}Fe_{0.99}Si₂)
 217077-87-7P, Cobalt magnesium silicide (Co_{0.99}Mg_{0.01}Si₂)
 217077-93-5P, Calcium cobalt silicide (Ca_{0.01}Co_{0.99}Si₂)
 217077-98-0P, Cobalt strontium silicide (Co_{0.99}Sr_{0.01}Si₂)
 217078-02-9P, Barium cobalt silicide (Ba_{0.01}Co_{0.99}Si₂)
 217078-11-0P, Magnesium nickel silicide (Mg_{0.01}Ni_{0.99}Si₂)
 217078-15-4P, Calcium nickel silicide (Ca_{0.01}Ni_{0.99}Si₂)
 217078-20-1P, Nickel strontium silicide (Ni_{0.99}Sr_{0.01}Si₂)
 217078-25-6P, Barium nickel silicide (Ba_{0.01}Ni_{0.99}Si₂)
 (anodes; secondary Li batteries containing alkaline earth metal-substituted transition metal silicides as anodes)

RN 217077-72-0 HCAPLUS

CN Iron magnesium silicide (Fe_{0.99}Mg_{0.01}Si₂) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		

Si	2	7440-21-3
Mg	0.01	7439-95-4
Fe	0.99	7439-89-6

RN 217077-73-1 HCAPLUS

CN Calcium iron silicide (Ca0.01Fe0.99Si2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Ca	0.01	7440-70-2
Si	2	7440-21-3
Fe	0.99	7439-89-6

RN 217077-75-3 HCAPLUS

CN Iron strontium silicide (Fe0.99Sr0.01Si2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Sr	0.01	7440-24-6
Si	2	7440-21-3
Fe	0.99	7439-89-6

RN 217077-77-5 HCAPLUS

CN Barium iron silicide (Ba0.01Fe0.99Si2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Ba	0.01	7440-39-3
Si	2	7440-21-3
Fe	0.99	7439-89-6

RN 217077-87-7 HCAPLUS

CN Cobalt magnesium silicide (Co0.99Mg0.01Si2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Co	0.99	7440-48-4
Si	2	7440-21-3
Mg	0.01	7439-95-4

RN 217077-93-5 HCAPLUS

CN Calcium cobalt silicide (Ca0.01Co0.99Si2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Ca	0.01	7440-70-2
Co	0.99	7440-48-4
Si	2	7440-21-3

RN 217077-98-0 HCAPLUS

CN Cobalt strontium silicide (Co0.99Sr0.01Si2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====

Co	0.99	7440-48-4
Sr	0.01	7440-24-6
Si	2	7440-21-3

RN 217078-02-9 HCAPLUS

CN Barium cobalt silicide (Ba0.01Co0.99Si2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Co	0.99	7440-48-4
Ba	0.01	7440-39-3
Si	2	7440-21-3

RN 217078-11-0 HCAPLUS

CN Magnesium nickel silicide (Mg0.01Ni0.99Si2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Si	2	7440-21-3
Ni	0.99	7440-02-0
Mg	0.01	7439-95-4

RN 217078-15-4 HCAPLUS

CN Calcium nickel silicide (Ca0.01Ni0.99Si2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Ca	0.01	7440-70-2
Si	2	7440-21-3
Ni	0.99	7440-02-0

RN 217078-20-1 HCAPLUS

CN Nickel strontium silicide (Ni0.99Sr0.01Si2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Sr	0.01	7440-24-6
Si	2	7440-21-3
Ni	0.99	7440-02-0

RN 217078-25-6 HCAPLUS

CN Barium nickel silicide (Ba0.01Ni0.99Si2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Ba	0.01	7440-39-3
Si	2	7440-21-3
Ni	0.99	7440-02-0

IC ICM H01M004-02

ICS H01M004-58; H01M004-66; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Battery anodes

(secondary Li batteries containing alkaline earth metal-substituted

transition metal silicides as anodes)
IT 217077-72-0P, Iron magnesium silicide (Fe0.99Mg0.01Si2)
217077-73-1P, Calcium iron silicide (Ca0.01Fe0.99Si2)
217077-75-3P, Iron strontium silicide (Fe0.99Sr0.01Si2)
217077-77-5P, Barium iron silicide (Ba0.01Fe0.99Si2)
217077-80-0P, Iron silicide (Fe0.99Si2) 217077-87-7P, Cobalt
magnesium silicide (Co0.99Mg0.01Si2) 217077-93-5P, Calcium
cobalt silicide (Ca0.01Co0.99Si2) 217077-98-0P, Cobalt
strontium silicide (Co0.99Sr0.01Si2) 217078-02-9P, Barium
cobalt silicide (Ba0.01Co0.99Si2) 217078-06-3P, Cobalt silicide
(Co0.99Si2) 217078-11-0P, Magnesium nickel silicide
(Mg0.01Ni0.99Si2) 217078-15-4P, Calcium nickel silicide
(Ca0.01Ni0.99Si2) 217078-20-1P, Nickel strontium silicide
(Ni0.99Sr0.01Si2) 217078-25-6P, Barium nickel silicide
(Ba0.01Ni0.99Si2)
(anodes; secondary Li batteries containing alkaline earth metal-substituted
transition metal silicides as anodes)

L52 ANSWER 26 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:618116 HCAPLUS

DOCUMENT NUMBER: 129:205156

TITLE: Electrode characteristics of nanocrystalline AB
compounds prepared by mechanical alloying

AUTHOR(S): Chen, Z.; Chen, Z.; Su, Y.; Lu, M.; Zhou, D.;
Huang, P.

CORPORATE SOURCE: Institute of Non-Equilibrium Materials Science and
Engineering, Central South University of
Technology, Changsha, 410083, Peop. Rep. China

SOURCE: Materials Research Bulletin (1998),
33(10), 1449-1455

CODEN: MRBUAC; ISSN: 0025-5408

PUBLISHER: Elsevier Science Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 30 Sep 1998

AB Nanocryst. LaNi5 and LaNi4.5Si0.5 synthesized by mech. alloying were
used as neg. materials for Ni-MH batteries. It was found that the
electrodes prepared with the nanocryst. powders had similar discharge
capacities, better activation behaviors, and longer cycle lifetimes,
compared with the neg. electrode prepared with
polycryst. coarse-grained LaNi5 alloy. The properties of the
electrodes prepared with these nanocryst. materials were attributed to
the structural characteristics of the compds. caused by mech.
alloying.

IT 130470-03-0
(electrode characteristics of nanocryst. AB compds. prepared by mech.
alloying)

RN 130470-03-0 HCAPLUS

CN Nickel alloy, base, Ni 63,La 33,Si 3.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	33	7439-91-0
Si	3.4	7440-21-3

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

Section cross-reference(s): 56

IT **Battery anodes**
 Mechanical alloying
 (electrode characteristics of nanocryst. AB compds. prepared by mech. alloying)

IT 54426-34-5 62651-39-2 73471-40-6 130470-03-0
 (electrode characteristics of nanocryst. AB compds. prepared by mech. alloying)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 27 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1998:614499 HCAPLUS
 DOCUMENT NUMBER: 129:278473
 TITLE: Hydrogen-absorbing magnesium alloys, battery anodes, and secondary alkaline batteries
 INVENTOR(S): Kono, Tatsuoki; Kamita, Motoki
 PATENT ASSIGNEE(S): Toshiba Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10251791	A	19980922	JP 1997-61386	19970314
			<--	
JP 3822306	B2	20060920		
PRIORITY APPLN. INFO.:			JP 1997-61386	19970314
			<--	

ED Entered STN: 29 Sep 1998

AB The title alloys have A2B-type crystal structure, e.g., CaF_2 , MgZn_2 , Mg_2Cu , Mg_2Ga , MgCu_2 , Fe_2P , and are represented by formula $\text{Mg}_{2-x}(\text{M1}-y\text{M2})_x$, where M1 = Si, Ca, Cu, Ga, Ge, Sr, In, Sn, Ba, Tl, Pb, Th, and/or rare earth metals containing Y; M2 = elements having higher electronegativity than Mg (other than M1); $-0.6 < x < 0.6$; $y = 0.01-0.8$. Claimed anodes use the above alloys. Claimed batteries use the above anodes. The alloys have good chemical stability while absorbing H and absorption-desorption reversibility.

IT 213980-43-9 213980-46-2 213980-48-4
 213980-54-2 213980-69-9

(hydrogen-absorbing magnesium alloys having stability and reversibility for anodes of alkaline batteries)

RN 213980-43-9 HCAPLUS

CN Magnesium alloy, base, Mg 59, Si 27, Co 14 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Mg	59	7439-95-4
Si	27	7440-21-3
Co	14	7440-48-4

RN 213980-46-2 HCAPLUS

CN Tin alloy, base, Sn 61, Mg 27, V 7.5, Mn 4.1 (9CI) (CA INDEX NAME)

Component	Component	Component
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	Percent	Registry Number
=====+=====+=====		
Sn	61	7440-31-5
Mg	27	7439-95-4
V	7.5	7440-62-2
Mn	4.1	7439-96-5

RN 213980-48-4 HCAPLUS

CN Magnesium alloy, base, Mg 56, Ni 30, Si 14 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Mg	56	7439-95-4
Ni	30	7440-02-0
Si	14	7440-21-3

RN 213980-54-2 HCAPLUS

CN Lanthanum alloy, base, La 70, Mg 27, Fe 2.8, Sn 0.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
La	70	7439-91-0
Mg	27	7439-95-4
Fe	2.8	7439-89-6
Sn	0.7	7440-31-5

RN 213980-69-9 HCAPLUS

CN Magnesium alloy, base, Mg 44, Y 40, Co 15, P 1.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Mg	44	7439-95-4
Y	40	7440-65-5
Co	15	7440-48-4
P	1.4	7723-14-0

IC ICM C22C023-00

ICS H01M004-24; H01M010-24

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56

ST hydrogen absorbing magnesium alloy anode battery

IT Battery anodes

(hydrogen-absorbing magnesium alloys having stability and reversibility for anodes of alkaline batteries)

IT 1333-74-0, Hydrogen, uses 213980-43-9 213980-44-0

213980-45-1 213980-46-2 213980-47-3 213980-48-4

213980-49-5 213980-50-8 213980-51-9 213980-52-0 213980-53-1

213980-54-2 213980-55-3 213980-56-4 213980-57-5

213980-58-6 213980-59-7 213980-60-0 213980-61-1 213980-62-2

213980-63-3 213980-64-4 213980-65-5 213980-66-6 213980-67-7

213980-68-8 213980-69-9 213980-70-2 213980-71-3

213980-72-4

(hydrogen-absorbing magnesium alloys having stability and reversibility for anodes of alkaline batteries)

L52 ANSWER 28 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1998:352237 HCAPLUS
 DOCUMENT NUMBER: 129:56538
 TITLE: Hydrogen-absorbing alloys for battery anodes with high capacity and good cycle performance and their manufacture
 INVENTOR(S): Yamamoto, Toru; Tsuji, Yoichiro; Toyoguchi, Yoshinori
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10147827	A	19980602	JP 1996-308170	19961119

PRIORITY APPLN. INFO.: JP 1996-308170 19961119
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 <--

ED Entered STN: 10 Jun 1998

AB The title alloys have the general formula MgM_xNi_y-x ($M = Cr, Mo, W, V, Co, Fe, Cu, Pb, Ag, Al, Mn, Zn, Zr, In, Ga, Hf, Si, B, P$, rare earth metal; $x = 0.05-0.4$, $y = 0.5-2$) and have amorphous alloy phases. Manufacture of the alloys is characterized by mech. alloying of Mg, Ni, and M in a ball mill under the condition of F/t (t = thickness of alloy layer on the surface of ball and pot; F = centrifugal force on the ball) $3 + 10^{-6}$ s²/g. Preferably, powders of highly crystalline carbon or Ni are adhered on powders of the alloys in inert gases under mech. stress by planetary ball mill, hybridization, or mechanofusion method. H-absorbing alloy electrodes made from the alloys or their hydrides, are also claimed.

IT 208596-80-9P 208596-82-1P

(mech. alloying in manufacture of H-absorbing Mg-Ni-based amorphous alloys for battery anodes with high capacity and good cycle performance)

RN 208596-80-9 HCAPLUS

CN Nickel alloy, base, Ni 52, Mg 43, Si 5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	52	7440-02-0
Mg	43	7439-95-4
Si	5	7440-21-3

RN 208596-82-1 HCAPLUS

CN Nickel alloy, base, Ni 52, Mg 43, P 5.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	52	7440-02-0
Mg	43	7439-95-4
P	5.5	7723-14-0

IC ICM C22C019-00

ICS C22C045-04; H01M004-24; H01M010-24

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 56

IT **Battery anodes**
 Mechanical alloying
 (mech. alloying in manufacture of H-absorbing Mg-Ni-based amorphous alloys for battery anodes with high capacity and good cycle performance)

IT 77325-33-8P 90738-65-1P 208596-58-1P 208596-59-2P 208596-60-5P
 208596-61-6P 208596-62-7P 208596-63-8P 208596-65-0P
 208596-67-2P 208596-68-3P 208596-69-4P 208596-70-7P
 208596-71-8P 208596-72-9P 208596-73-0P 208596-74-1P
 208596-75-2P 208596-76-3P 208596-77-4P 208596-78-5P
 208596-79-6P 208596-80-9P 208596-81-0P
 208596-82-1P 208596-83-2P
 (mech. alloying in manufacture of H-absorbing Mg-Ni-based amorphous alloys for battery anodes with high capacity and good cycle performance)

L52 ANSWER 29 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1998:239734 HCAPLUS
 DOCUMENT NUMBER: 128:310557
 TITLE: Hydrogen-absorbing multiphase alloys, their manufacture, and nickel hydrogen secondary batteries using the alloys
 INVENTOR(S): Sawa, Takao; Inaba, Takamichi; Kawashima, Fumiyuki
 PATENT ASSIGNEE(S): Toshiba Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 10102174	A	19980421	JP 1996-259685	19960930

PRIORITY APPLN. INFO.: JP 1996-259685 19960930
 <--

ED Entered STN: 27 Apr 1998

AB The H-absorbing alloys are represented as AaTbMc (A = La, Ce, Pr, Nd, and/or Y; T = Ni, Co, Fe, Cu, Mn, and/or Cr; M = Al, Si, Ga, Ge, Zn, Sn, In, and/or Sb; a = 20-70; b = 30-60; c = 10-40; a + b + c = 100) and they have plurality of phases of different **crystal structures**. The alloys are manufactured by quenching of AaTbMc to form, at least partially, nonequil. phases followed by heating. Secondary batteries using the alloys as **anodes** having enhanced capacitance and cycle life are also claimed.

IT 206657-08-1 206657-09-2
 (hydrogen-absorbing multiphase alloys for nickel hydrogen secondary battery **anodes**)

RN 206657-08-1 HCAPLUS

CN Lanthanum alloy, base, La 55, Ce 24, Ni 12, Fe 5.7, Al 2.8, Si 1.4 (9CI)
 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
La	55	7439-91-0

Ce	24	7440-45-1
Ni	12	7440-02-0
Fe	5.7	7439-89-6
Al	2.8	7429-90-5
Si	1.4	7440-21-3

RN 206657-09-2 HCAPLUS

CN Cerium alloy, base, Ce 40, La 39, Ni 9, Cu 6.5, Si 2.9, Al 2.8 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+	=====+	=====+
Ce	40	7440-45-1
La	39	7439-91-0
Ni	9	7440-02-0
Cu	6.5	7440-50-8
Si	2.9	7440-21-3
Al	2.8	7429-90-5

IC ICM C22C019-00

ICS C22C028-00; H01M004-38; H01M010-30

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56

ST hydrogen absorbing alloy secondary battery anode; multiphase hydrogen absorbing alloy battery; nickel hydrogen secondary battery anode

IT Battery anodes

Secondary batteries

(hydrogen-absorbing multiphase alloys for nickel hydrogen secondary battery anodes)

IT 206657-07-0 206657-08-1 206657-09-2 206657-10-5

206657-11-6 206657-12-7 206657-13-8 206657-14-9 206657-15-0

206657-16-1 206657-17-2 206657-18-3 206657-19-4

(hydrogen-absorbing multiphase alloys for nickel hydrogen secondary battery anodes)

L52 ANSWER 30 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:239733 HCAPLUS

DOCUMENT NUMBER: 128:310556

TITLE: Hydrogen-absorbing multiphase alloys, their manufacture, and nickel hydrogen secondary batteries using the alloys

INVENTOR(S): Sawa, Takao; Kawashima, Fumiyuki; Sakamoto, Toshiya

PATENT ASSIGNEE(S): Toshiba Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 10102173	A	19980421	JP 1996-259684	19960930

<--

PRIORITY APPLN. INFO.: JP 1996-259684 19960930

<--

ED Entered STN: 27 Apr 1998

AB The H-absorbing alloys are represented as AaRbTcMd (A = Ti, Zr, and/or Hf; R = La, Ce, Pr, Nd, and/or Y; T = Ni, Co, Fe, Cu, Mn, and/or Cr; M = Al, Si, Ga, Ge, Zn, Sn, In, and/or Sb; a = 30-70; b = 0-30; c = 10-60; d = 5-30; a + b + c + d = 100) having plurality of phases of different **crystal structures** or compns. and they are obtained by quenching of molten alloys. The alloys are manufactured by quenching of AaRbTcMd to, at least partially, form nonequil. phases followed by heating. Secondary batteries using the alloys as **anodes** having enhanced capacitance and cycle life are also claimed.

IT 206656-93-1 206656-94-2
(multiphase hydrogen-absorbing alloys for nickel hydrogen secondary battery **anodes**)

RN 206656-93-1 HCAPLUS

CN Zirconium alloy, base, Zr 41,Hf 34,Ni 14,Fe 6.5,Al 3.1,Si 1.6 (9CI)
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Zr	41	7440-67-7
Hf	34	7440-58-6
Ni	14	7440-02-0
Fe	6.5	7439-89-6
Al	3.1	7429-90-5
Si	1.6	7440-21-3

RN 206656-94-2 HCAPLUS

CN Zirconium alloy, base, Zr 43,Ti 22,Ni 15,Cu 11,Si 4.8,Al 4.6 (9CI)
(CA INDEX NAME)

Component	Component Percent	Component Registry Number
Zr	43	7440-67-7
Ti	22	7440-32-6
Ni	15	7440-02-0
Cu	11	7440-50-8
Si	4.8	7440-21-3
Al	4.6	7429-90-5

IC ICM C22C019-00

ICS C22C014-00; C22C016-00; C22C027-00; H01M004-38; H01M010-30

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56

ST hydrogen absorbing alloy secondary battery **anode**; quenched molten alloy hydrogen absorbing; multiphase hydrogen absorbing alloy battery **anode**; nickel hydrogen secondary battery **anode**

IT **Battery anodes**
Secondary batteries
(multiphase hydrogen-absorbing alloys for nickel hydrogen secondary battery **anodes**)

IT 206656-92-0 206656-93-1 206656-94-2 206656-95-3
206656-96-4 206656-97-5 206656-98-6 206656-99-7 206657-00-3
206657-01-4 206657-02-5 206657-03-6
(multiphase hydrogen-absorbing alloys for nickel hydrogen secondary battery **anodes**)

L52 ANSWER 31 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:228688 HCAPLUS
 DOCUMENT NUMBER: 128:246189
 TITLE: Electrochemical behavior of mechanically alloyed
 Mg-Ni-based amorphous hydrogen storage alloys
 AUTHOR(S): Wu, Yuming; Lei, Yongquan; Wu, Jing; Wang, Qidong
 CORPORATE SOURCE: Zhejiang University, Hangzhou, 310027, Peop. Rep.
 China
 SOURCE: Xiyou Jinshu Cailiao Yu Gongcheng (1997
), 26(3), 26-29
 CODEN: XJCGEA; ISSN: 1002-185X
 PUBLISHER: Xiyou Jinshu Cailiao Yu Gongcheng Zazhishe
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese
 ED Entered STN: 23 Apr 1998
 AB The electrochem. behaviors of amorphous Mg₅₀Ni_{50-x-y}M_xN_y (M, N=Co, Al
 and Si) hydrogen storage alloys prepared by mech. alloying (MA) were
 studied. The results showed that the MA amorphous alloys can be
 easily electrochem. activated and possess high electrochem. capacity.
 The MA Mg₅₀Ni₅₀ alloy has a maximum discharge capacity around 500 mA-h/g,
 which is ten times higher than those crystalline alloy. However,
 the chemical stabilities of the amorphous Mg₅₀Ni_{50-x-y}M_xN_y alloys are
 rather poor, and their capacities degrade at the rate of 10-60 mA h/g
 per cycle. XRD results revealed that high rate of capacity degradation of
 the amorphous Mg-Ni-based alloys is caused by oxidation of the magnesium
 in basic solution
 IT 156499-44-4
 (electrochem. behavior of mech. alloyed Mg-Ni-based amorphous
 hydrogen storage alloys)
 RN 156499-44-4 HCAPLUS
 CN Nickel alloy, base, Ni 66, Mg 30, Si 3.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	66	7440-02-0
Mg	30	7439-95-4
Si	3.5	7440-21-3

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)

Section cross-reference(s): 56

IT Battery anodes

Mechanical alloying

(electrochem. behavior of mech. alloyed Mg-Ni-based amorphous
hydrogen storage alloys)

IT 153129-33-0, Magnesium 50, nickel 50 atomic 156499-43-3

156499-44-4 156499-45-5 156499-46-6

(electrochem. behavior of mech. alloyed Mg-Ni-based amorphous
hydrogen storage alloys)

L52 ANSWER 32 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:198678 HCAPLUS
 DOCUMENT NUMBER: 128:206798
 TITLE: Investigations on synthesis, characterization and
 hydrogenation behavior of the spin- and
 thermal-melted versions of LaNi_{5-x}Si_x (x=0.1, 0.3,
 0.5) hydrogen storage materials
 AUTHOR(S): Srivastava, Sumita; Srivastava, O. N.

CORPORATE SOURCE: Dep. Physics, Banaras Hindu Univ., Varanasi,
221005, India

SOURCE: Journal of Alloys and Compounds (1998),
267(1-2), 240-245

CODEN: JALCEU; ISSN: 0925-8388

PUBLISHER: Elsevier Science S.A.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 08 Apr 1998

AB The present study deals with investigations on the synthesis and characterization of neg. electrode material for high energy d. Ni-MH battery. The hydrogen storage material (MH) has been synthesized through normal casting and melt-spinning techniques. In LaNi₅/MmNi₅ family various substitutions like Al, Mn, Co have been studied. The substitution of metalloid like Si is known to be very helpful in improving several hydrogenation properties. In the present study, the Si substituted versions of AB₅-type storage materials typified by LaNi₅-xSix (x=0.1, 0.3, 0.5) have been investigated. A comparison between the present material and the conventional AB₅-type material MmNi₄.3Al_{0.3}Mn_{0.4} has also been made which has been previously studied. The main features revealed by XRD characterizations are the existence of the free Ni and Si together with AB₅ material for all the three compns. These free Ni and Si were found to disappear and yield, giving rise to a singular material after hydrogenation. The melt-spun version of the material was found to grow invariably in a direction perpendicular to the c-axis. The kinetics and activation process was better for the melt-spun version of the LaNi_{4.7}Si_{0.3} alloy than its thermally-melted counterpart (bulk) as well as to the alloy MmNi_{4.3}Al_{0.3}Mn_{0.4}. For example, the kinetics of the melt-spun version of LaNi_{4.7}Si_{0.3} is 60% faster than its bulk version and 70% faster than the melt-spun version of MmNi_{4.3}Al_{0.3}Mn_{0.4}. Similarly, the melt-spun version of the alloy LaNi_{4.7}Si_{0.3} gets activated in the 2nd cycle itself where as the alloy MmNi_{4.3}Al_{0.3}Mn_{0.4} attains this stage only in the 6th cycle.

IT 130470-03-0 145989-38-4 202932-36-3

(synthesis, characterization and hydrogenation behavior of the spin- and thermal-melted versions of LaNi₅-xSix hydrogen storage materials)

RN 130470-03-0 HCAPLUS

CN Nickel alloy, base, Ni 63,La 33,Si 3.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	63	7440-02-0
La	33	7439-91-0
Si	3.4	7440-21-3

RN 145989-38-4 HCAPLUS

CN Nickel alloy, base, Ni 65,La 33,Si 2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	65	7440-02-0
La	33	7439-91-0
Si	2	7440-21-3

RN 202932-36-3 HCAPLUS

CN Nickel alloy, base, Ni 67,La 32,Si 0.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	67	7440-02-0
La	32	7439-91-0
Si	0.7	7440-21-3

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56

IT Battery anodes

(synthesis, characterization and hydrogenation behavior of the spin- and thermal-melted versions of LaNi₅-xSix hydrogen storage materials)

IT 130470-03-0 145989-38-4 202932-36-3

(synthesis, characterization and hydrogenation behavior of the spin- and thermal-melted versions of LaNi₅-xSix hydrogen storage materials)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 33 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:293662 HCAPLUS

DOCUMENT NUMBER: 126:280218

TITLE: Nonaqueous battery and anode for battery

INVENTOR(S): Saito, Akihiko; Aono, Yasuhisa; Horiba, Tatsuo; Kodama, Hideyo; Dozono, Toshinori; Inagaki, Masahisa

PATENT ASSIGNEE(S): Hitachi, Ltd., Japan

SOURCE: Fr. Demande, 42 pp.

CODEN: FRXXBL

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2735285	A1	19961213	FR 1996-7281	19960612
			<--	
FR 2735285	B1	19990226		
JP 09063651	A	19970307	JP 1996-134672	19960529
			<--	
CA 2178675	A1	19961213	CA 1996-2178675	19960610
			<--	
CA 2178675	C	20001212		
US 5770333	A	19980623	US 1996-660764	19960610
			<--	
PRIORITY APPLN. INFO.:			JP 1995-144780	A 19950612
			<--	
			JP 1996-134672	A 19960529
			<--	

ED Entered STN: 08 May 1997

AB The nonaq. battery contains a pos. electrode, a neg. electrode reversibly absorbing an alkali metal, and a nonaq. electrolyte. A discharging capacity of the neg. electrode is 100-2500 mA-h/cm³ during a period beginning from the moment of the discharge start at 0.5 mA/cm² and ending at the

moment when the voltage between the **neg. electrode** and pos. electrode is 1.0 V. The battery has a charge capacity of 380-1400 mA-h/g. The **neg. electrode** consists of an intermetallic compound containing ≥ 1 element from a Group IVB, P, and Sb. The intermetallic compound has 1 of the CaF_2 -, ZnS -, and AlLiSi -type structure. The CaF_2 structure is an inverse fluorspar structure or fluorspar structure having a lattice constant of >6.36 Å.

IT 12423-44-8 60968-66-3, Copper magnesium antimonide (CuMgSb)

(in lithium-intermetallic anode for battery)

RN 12423-44-8 HCAPLUS

CN Antimony, compd. with magnesium and nickel (1:1:1) (7CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Sb	1	7440-36-0
Ni	1	7440-02-0
Mg	1	7439-95-4

RN 60968-66-3 HCAPLUS

CN Antimony, compd. with copper and magnesium (1:1:1) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Cu	1	7440-50-8
Sb	1	7440-36-0
Mg	1	7439-95-4

IC ICM H01M010-24

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT **Battery anodes**

(for lithium secondary battery)

IT **Secondary batteries**

(lithium, nonaq.; lithium-intermetallic anode for)

IT 1310-52-7, Magnesium germanide (Mg_2Ge) 1312-41-0, Indium antimonide (InSb) 1313-08-2 7439-93-2, Lithium, uses 12017-12-8, Cobalt silicide (CoSi_2) 12032-53-0 12063-98-8, Gallium phosphide (GaP), uses 12064-03-8, Gallium antimonide (GaSb) 12201-89-7, Nickel silicide (NiSi_2) 12423-44-8 20859-73-8, Aluminum phosphide (AlP) 22398-80-7, Indium phosphide (InP), uses 25152-52-7, Aluminum antimonide (AlSb) 53095-77-5, Magnesium silicide (MgSi_2) 60968-66-3, Copper magnesium antimonide (CuMgSb) 102257-73-8 (in lithium-intermetallic anode for battery)

L52 ANSWER 34 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:582559 HCAPLUS

DOCUMENT NUMBER: 125:226479

TITLE: Electrochemical evaluation of $\text{LaNi}_5\text{-xGex}$ metal hydride alloys

AUTHOR(S): Witham, C.; Ratnakumar, B. V.; Bowman, R. C., Jr.; Hightower, A.; Fultz, B.

CORPORATE SOURCE: Div. Eng. Applied Sci., California Inst. Technol., Pasadena, CA, 91125, USA

SOURCE: Journal of the Electrochemical Society (

1996), 143(9), L205-L208
 CODEN: JESOAN; ISSN: 0013-4651
 Electrochemical Society

PUBLISHER:
 DOCUMENT TYPE: Journal
 LANGUAGE: English

ED Entered STN: 30 Sep 1996

AB We report a detailed evaluation of Ge-substituted LaNi₅ for electrochem. application as a neg. electrode in alkaline rechargeable cells. Alloys with small substitutions of Ge for Ni show operating pressures, chargeability, cyclic lifetime, and kinetics for hydrogen absorption and desorption all superior to those found in many other substituted LaNi₅ alloys. These improved properties were achieved with a minimal reduction in hydrogen storage capacity.

IT 158146-17-9 182001-56-5 182001-63-4

(electrochem. evaluation of LaNi₅-xGex metal hydride alloys)

RN 158146-17-9 HCAPLUS

CN Lanthanum, compd. with nickel and tin (1:4.8:0.2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Sn	0.2	7440-31-5
Ni	4.8	7440-02-0
La	1	7439-91-0

RN 182001-56-5 HCAPLUS

CN Germanium, compd. with lanthanum and nickel (0.4:1:4.6) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Ge	0.4	7440-56-4
Ni	4.6	7440-02-0
La	1	7439-91-0

RN 182001-63-4 HCAPLUS

CN Germanium, compd. with lanthanum and nickel (0.3:1:4.7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Ge	0.3	7440-56-4
Ni	4.7	7440-02-0
La	1	7439-91-0

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56, 72

IT Anodes

(battery, electrochem. evaluation of LaNi₅-xGex metal hydride alloys)

IT 158146-17-9 182001-56-5 182001-63-4

182001-69-0

(electrochem. evaluation of LaNi₅-xGex metal hydride alloys)

L52 ANSWER 35 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:161025 HCAPLUS

DOCUMENT NUMBER: 124:237115

TITLE: AB5 metal hydride alloys for alkaline rechargeable cells

AUTHOR(S): Witham, C. K.; Bowman, R. C. Jr.; Ratnakumar, B. V.; Fultz, B.; Surampudi, S.

CORPORATE SOURCE: California Institute Technology, Pasadena, CA, 91125, USA

SOURCE: Annual Battery Conference on Applications and Advances, 11th, Long Beach, Calif., Jan. 9-12, 1996 (1996), 129-34. Institute of Electrical and Electronics Engineers: New York, N. Y.

CODEN: 62LEAL

DOCUMENT TYPE: Conference

LANGUAGE: English

ED Entered STN: 19 Mar 1996

AB A variety of metal elements were partially substituted at 3.3 atomic% for Ni in LaNi5. X-ray diffraction was performed to find the lattice parameters of each material and to determine the average grain size and lattice strain induced by hydrogen activation. Neg. electrodes were made of each material and were cycled in alkaline rechargeable cells to determine the effect of the metal atom substituent on the battery cyclic lifetime.

IT 158146-17-9 174661-13-3 174661-14-4
174661-17-7
(lanthanum-nickel-metal hydride alloys for alkaline rechargeable cells)

RN 158146-17-9 HCAPLUS

CN Lanthanum, compd. with nickel and tin (1:4.8:0.2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
Sn	0.2	7440-31-5
Ni	4.8	7440-02-0
La	1	7439-91-0

RN 174661-13-3 HCAPLUS

CN Nickel alloy, base, Ni 66,La 33,Si 1.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Ni	66	7440-02-0
La	33	7439-91-0
Si	1.3	7440-21-3

RN 174661-14-4 HCAPLUS

CN Nickel alloy, base, Ni 65,La 32,Ge 3.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Ni	65	7440-02-0
La	32	7439-91-0
Ge	3.3	7440-56-4

RN 174661-17-7 HCAPLUS

CN Nickel alloy, base, Ni 63,La 31,Sb 5.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
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=====+=====+=====
Ni      63      7440-02-0
La      31      7439-91-0
Sb      5.5     7440-36-0

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CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56

IT Anodes

(battery, hydrogen-absorbing; lanthanum-nickel-metal hydride alloys for alkaline rechargeable cells)

IT 12196-72-4 73063-91-9 158146-17-9 174661-13-3

174661-14-4 174661-15-5 174661-16-6 174661-17-7

(lanthanum-nickel-metal hydride alloys for alkaline rechargeable cells)

L52 ANSWER 36 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1995:357550 HCAPLUS

DOCUMENT NUMBER: 122:165434

TITLE: The surface of intermetallic hydride electrodes

AUTHOR(S): Schlapbach, Louis; Meli, Felix; Züttel, Andreas

CORPORATE SOURCE: Solid State Phys. Group, Univ. Freiburg, Fribourg, CH-1700, Switz.

SOURCE: Proceedings - Electrochemical Society (1994), 94-27 (Hydrogen and Metal Hydride Batteries), 102-10.

CODEN: PESODO; ISSN: 0161-6374

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 16 Feb 1995

AB Powder grains of hydrogen storing intermetallic compds. compacted to neg. electrodes in alkaline electrolyte should be functional materials with bulk properties providing high H concentration and mobility at a very low price and surface properties which guarantee long cyclic life at high exchange c.d. Results of XPS studies of AB5 and AB2 type intermetallic electrodes after various chemical and electrochem. pretreatments are presented. Activated electrodes with high exchange c.d. are characterized by a high content of metallic Ni in the surface region. Results are given for various LaNi5-type and ZrVxNi2-x electrodes by electrochem. cycling and surface anal.

IT 130470-03-0

(surface of intermetallic hydride electrodes)

RN 130470-03-0 HCAPLUS

CN Nickel alloy, base, Ni 63, La 33, Si 3.4 (9CI) (CA INDEX NAME)

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Component      Component      Component
                Percent      Registry Number
=====+=====+=====
Ni      63      7440-02-0
La      33      7439-91-0
Si      3.4     7440-21-3

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CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56

IT Anodes

(battery, surface of intermetallic hydride electrodes)

IT 12196-72-4 76598-35-1 82089-05-2 130470-03-0

161374-63-6 161374-64-7

(surface of intermetallic hydride electrodes)

L52 ANSWER 37 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1995:299891 HCAPLUS
 DOCUMENT NUMBER: 122:60156
 TITLE: Hydrogen storage alloy for alkaline battery
anodes
 INVENTOR(S): Yamamura, Yasuharu; Seri, Hajime; Tsuji, Yoichiro;
 Owada, Naoko; Iwaki, Tsutomu
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
 SOURCE: Eur. Pat. Appl., 21 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 621647	A1	19941026	EP 1994-105990	19940418
EP 621647	B1	19980225		
R: DE, FR, GB, NL				
JP 07003365	A	19950106	JP 1994-20995	19940218
US 5532076	A	19960702	US 1994-219697	19940329
PRIORITY APPLN. INFO.:			JP 1993-92865	A 19930420
ED Entered STN: 19 Jan 1995				
AB The alloy is $Zr_{1.2-a}Ti_{Mn}Al_{w}Ni_{x}MyCr_z$, where M is ≥ 1 element selected from Si, Zn, Sn, Fe, Mo, Cu and Co; $a = 0.1-1.2$, $v = 0.4-1.2$, $0 < w \leq 0.3$, $x = 0.8-1.6$, $y \leq 0.2$, $z \leq 0.3$, and $(v + w + x + y + z) = 1.7-2.7$. The alloy has ≥ 1 of a C14-type Laves phase of a crystal structure similar to that of $MgZn_2$ and a C15-type Laves phase of a crystal structure similar to that of $MgCu_2$ as a main alloy phase.				
IT 160285-51-8P 160285-53-0P 160285-61-0P 160285-63-2P				
(hydrogen storage alloy for alkaline battery anodes)				
RN 160285-51-8 HCAPLUS				
CN Zirconium alloy, base, Zr 35, Ni 34, Mn 18, Ti 9.2, Al 2.6, Si 1.3 (9CI) (CA INDEX NAME)				

Component	Component Percent	Component Registry Number
Zr	35	7440-67-7
Ni	34	7440-02-0
Mn	18	7439-96-5
Ti	9.2	7440-32-6
Al	2.6	7429-90-5
Si	1.3	7440-21-3

RN 160285-53-0 HCAPLUS
 CN Zirconium alloy, base, Zr 33, Ni 32, Mn 18, Ti 8.8, Sn 5.4, Al 2.5 (9CI)
 (CA INDEX NAME)

Component	Component Percent	Component Registry Number
-----------	-------------------	---------------------------

```

=====+=====+=====
Zr      33      7440-67-7
Ni      32      7440-02-0
Mn      18      7439-96-5
Ti      8.8     7440-32-6
Sn      5.4     7440-31-5
Al      2.5     7429-90-5

```

RN 160285-61-0 HCAPLUS

CN Zirconium alloy, base, Zr 34,Ni 33,Mn 18,Ti 9,Cr 2.4,Al 1.9,Si 1.3
(9CI) (CA INDEX NAME)

```

Component      Component      Component
                Percent      Registry Number
=====+=====+=====
Zr      34      7440-67-7
Ni      33      7440-02-0
Mn      18      7439-96-5
Ti      9       7440-32-6
Cr      2.4     7440-47-3
Al      1.9     7429-90-5
Si      1.3     7440-21-3

```

RN 160285-63-2 HCAPLUS

CN Zirconium alloy, base, Zr 33,Ni 32,Mn 17,Ti 8.6,Sn 5.3,Cr 2.3,Al 1.8
(9CI) (CA INDEX NAME)

```

Component      Component      Component
                Percent      Registry Number
=====+=====+=====
Zr      33      7440-67-7
Ni      32      7440-02-0
Mn      17      7439-96-5
Ti      8.6     7440-32-6
Sn      5.3     7440-31-5
Cr      2.3     7440-47-3
Al      1.8     7429-90-5

```

IC ICM H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

Section cross-reference(s): 56

ST hydrogen storage alloy battery anode; titanium manganese
aluminum alloy hydrogen; nickel chromium titanium alloy hydrogen

IT **Anodes**
(battery, alloy for hydrogen alkaline)

IT 1333-74-0, Hydrogen, uses
(alloy for alkaline battery anodes of)

IT 160285-46-1P 160285-47-2P 160285-48-3P 160285-49-4P
160285-50-7P 160285-51-8P 160285-52-9P
160285-53-0P 160285-54-1P 160285-55-2P 160285-56-3P
160285-57-4P 160285-58-5P 160285-59-6P 160285-60-9P
160285-61-0P 160285-62-1P 160285-63-2P
160285-64-3P 160285-65-4P 160285-66-5P 160285-67-6P
(hydrogen storage alloy for alkaline battery anodes)

L52 ANSWER 38 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1994:615745 HCAPLUS

DOCUMENT NUMBER: 121:215745

TITLE: Electrochemical evaluation of La-Ni-Sn metal

hydride alloys
 AUTHOR(S): Ratnakumar, B. V.; Witham, C.; Fultz, B.; Halpert, G.
 CORPORATE SOURCE: Jet Propulsion Lab., California Inst. Technol., Pasadena, CA, 91109, USA
 SOURCE: Journal of the Electrochemical Society (1994), 141(8), L89-L91
 CODEN: JESOAN; ISSN: 0013-4651
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 ED Entered STN: 29 Oct 1994
 AB A detailed electrochem. evaluation of Sn-modified LaNi5 was performed to evaluate its performance as a **neg. electrode** in alkaline rechargeable cells. Substituting small amts. of Sn for Ni provides a large improvement in the initial capacity and cycle lifetime of the electrode, and also serves to improve the kinetics of hydrogen absorption-desorption processes.
 IT 158146-17-9
 (charge-discharge behavior of electrodes of)
 RN 158146-17-9 HCAPLUS
 CN Lanthanum, compd. with nickel and tin (1:4.8:0.2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Sn	0.2	7440-31-5
Ni	4.8	7440-02-0
La	1	7439-91-0

CC 72-2 (**Electrochemistry**)
 Section cross-reference(s): 52, 66, 67
 IT **Anodes**
 Electrodes
 (battery, lanthanum-nickel and tin-modified lanthanum-nickel)
 IT 12196-72-4, LaNi5 62651-39-2, Lanthanum 16.7, nickel 83.3 (atomic)
 158146-17-9
 (charge-discharge behavior of electrodes of)

L52 ANSWER 39 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1989:98867 HCAPLUS
 DOCUMENT NUMBER: 110:98867
 TITLE: Hydrogen-storage **anodes** and their preparation
 INVENTOR(S): Gamo, Takaharu; Moriwaki, Yoshio; Iwaki, Tsutomu
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
 SOURCE: Eur. Pat. Appl., 31 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
EP 293660	A2	19881207	EP 1988-107839	19880516
			<--	
EP 293660	A3	19890816		
EP 293660	B1	19930616		

R: DE, FR, GB

JP 63284758	A	19881122	JP 1987-119411	19870515
			<--	
JP 01035863	A	19890206	JP 1987-190698	19870730
			<--	
JP 06050633	B	19940629		
JP 01048370	A	19890222	JP 1987-205683	19870819
			<--	
JP 06050634	B	19940629		
JP 01060961	A	19890308	JP 1987-216898	19870831
			<--	
JP 08021379	B	19960304		
JP 01102855	A	19890420	JP 1987-258889	19871014
			<--	
JP 3123049	B2	20010109		
PRIORITY APPLN. INFO.:			JP 1987-119411	A 19870515
			<--	
			JP 1987-190698	A 19870730
			<--	
			JP 1987-205683	A 19870819
			<--	
			JP 1987-216898	A 19870831
			<--	
			JP 1987-258889	A 19871014
			<--	

ED Entered STN: 17 Mar 1989

AB A H-storage anode comprises an alloy MM'a, where M is Zr, Ti, Hf, Ta, Y, Ca, Mg, La, Ce, Pr, Mm, Nb, Nd, Mo, Al and/or Si; M' is Ni, V, Cr, Mn, Fe, Co, Cu, Zn, Al, Si, Nb, Mo, W, Mg, Ca, Y, Ta, Pd, Ag, Au, Cd, In, Sn, Bi, La, Ce, and/or Mm (Mm is a mixture of rare earth elements, Pr, Nd, Th, and Sm); M and M' are different from each other; and a = 1.0-2.5. The alloy has an alloy phase which is substantially a Laves phase of an M-M' intermetallic compound, and has a crystal structure of hexagonally sym. C14 type having crystal lattice consts. a = 4.8-5.2 Å and c = 7.9-8.3 Å, and/or a cubically sym. C15 type having a crystal lattice constant of 6.92-7.70 Å. The anode is prepared by forming a dispersion of the alloy powder in a resin-binder solution containing a conducting material or a sintering aid, applying the dispersion to a conductive grid, and vacuum drying the coated grid when the dispersion contains a conducting material or sintering the grid when the dispersion contains a sintering aid. Secondary batteries using the invention anodes have a high capacity and long cycle life.

IT 119317-09-8 119317-10-1 119317-23-6

119317-57-6 119317-68-9 119317-69-0

(hydrogen-absorbing, anodes, for batteries)

RN 119317-09-8 HCAPLUS

CN Zirconium alloy, base, Zr 45,Ni 43,V 10,Si 1.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Zr	45	7440-67-7
Ni	43	7440-02-0
V	10	7440-62-2
Si	1.4	7440-21-3

RN 119317-10-1 HCAPLUS

CN Zirconium alloy, base, Zr 43,Ni 42,V 9.6,Sn 5.6 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Zr	43	7440-67-7
Ni	42	7440-02-0
V	9.6	7440-62-2
Sn	5.6	7440-31-5

RN 119317-23-6 HCAPLUS

CN Tin alloy, base, Sn 60,Zr 28,Ni 11,V 0.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Sn	60	7440-31-5
Zr	28	7440-67-7
Ni	11	7440-02-0
V	0.7	7440-62-2

RN 119317-57-6 HCAPLUS

CN Nickel alloy, base, Ni 38,Zr 34,Mn 24,Si 4.5 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Ni	38	7440-02-0
Zr	34	7440-67-7
Mn	24	7439-96-5
Si	4.5	7440-21-3

RN 119317-68-9 HCAPLUS

CN Zirconium alloy, base, Zr 41,Ni 33,Mn 22,Cr 2.6,Si 1.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Zr	41	7440-67-7
Ni	33	7440-02-0
Mn	22	7439-96-5
Cr	2.6	7440-47-3
Si	1.4	7440-21-3

RN 119317-69-0 HCAPLUS

CN Zirconium alloy, base, Zr 41,Ni 35,Mn 14,Fe 8.4,Si 1.4 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
=====+=====+=====		
Zr	41	7440-67-7
Ni	35	7440-02-0
Mn	14	7439-96-5
Fe	8.4	7439-89-6
Si	1.4	7440-21-3

IC ICM H01M004-38

ICS H01M004-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56

ST battery anode hydrogen storage; Laves phase alloy hydrogen anode

IT Anodes
(battery, hydrogen-absorbing Laves phase-containing alloys for)

IT 1333-74-0, Hydrogen, uses and miscellaneous
(alloys containing absorbed, anodes, for batteries)

IT 70607-20-4 76598-35-1 105810-46-6 119281-87-7 119281-88-8
 119281-89-9 119281-90-2 119281-91-3 119281-92-4 119281-93-5
 119281-94-6 119281-95-7 119281-96-8 119281-97-9 119281-98-0
 119281-99-1 119282-00-7 119282-01-8 119282-02-9 119282-03-0
 119282-04-1 119282-05-2 119282-06-3 119282-07-4 119282-08-5
 119282-09-6 119282-10-9 119282-11-0 119282-12-1 119282-13-2
 119282-14-3 119282-15-4 119282-16-5 119282-17-6 119282-18-7
 119282-19-8 119282-20-1 119282-21-2 119282-22-3 119282-23-4
 119282-24-5 119282-25-6 119282-26-7 119282-27-8 119282-28-9
 119282-29-0 119282-30-3 119282-31-4 119282-32-5 119282-33-6
 119282-34-7 119282-35-8 119282-36-9 119282-37-0 119282-38-1
 119282-39-2 119282-40-5 119282-41-6 119282-42-7 119316-95-9
 119316-96-0 119316-97-1 119316-98-2 119316-99-3 119317-00-9
 119317-01-0 119317-02-1 119317-03-2 119317-04-3 119317-05-4
 119317-06-5 119317-07-6 119317-08-7 119317-09-8
 119317-10-1 119317-11-2 119317-12-3 119317-13-4
 119317-14-5 119317-15-6 119317-16-7 119317-17-8 119317-18-9
 119317-19-0 119317-20-3 119317-21-4 119317-22-5
 119317-23-6 119317-24-7 119317-25-8 119317-26-9
 119317-27-0 119317-28-1 119317-29-2 119317-30-5 119317-31-6
 119317-32-7 119317-33-8 119317-34-9 119317-35-0 119317-36-1
 119317-37-2 119317-38-3 119317-39-4 119317-40-7 119317-41-8
 119317-42-9 119317-43-0 119317-44-1 119317-45-2 119317-46-3
 119317-47-4 119317-48-5 119317-49-6 119317-50-9 119317-51-0
 119317-52-1 119317-53-2 119317-54-3 119317-55-4 119317-56-5
 119317-57-6 119317-58-7 119317-59-8 119317-60-1
 119317-61-2 119317-62-3 119317-63-4 119317-64-5 119317-65-6
 119317-66-7 119317-67-8 119317-68-9 119317-69-0
 119317-70-3 119335-48-7
 (hydrogen-absorbing, anodes, for batteries)

L52 ANSWER 40 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1987:70299 HCAPLUS

DOCUMENT NUMBER: 106:70299

TITLE: Metal-hydrogen alkaline battery

INVENTOR(S): Furukawa, Sanehiro; Murakami, Shuzo; Matsumoto, Takanao

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 61168869	A	19860730	JP 1985-7739	19850119
			<--	
JP 05084025	B	19931130		
PRIORITY APPLN. INFO.:			JP 1985-7739	19850119
			<--	

ED Entered STN: 07 Mar 1987
AB A Ca-Ni alloy containing B, Al, Si, Ti, V, Cr, Mn, Fe, Co, Cu, Zn, Y, Zr, Nb, Mo, Hf, Ta, Ce, Pr, Nd, Sm, and/or Gd and having similar **crystalline** structure as CaCu5 is used as H-absorbing anode material in a metal-H alkaline battery. Thus, CaNi_{4.8}M_{0.2} (M = Al, Mn, B, Si, V, Cr, Fe, Zn, or Cu), Ca_{0.9}M'_{0.1}Ni₅ (M' = Y, Zr, Nd, Ti, Mo, Hf, Ta, Ce, Pr, Nb, Sm, or Gd), CaNi₄Co, Ca_{0.8}Ti_{0.1}Zr_{0.1}Ni₅, and Ca_{0.8}Ti_{0.1}Zr_{0.1}Ni_{4.8}Al_{0.2} were mixed with acetylene black and a fluoeresin, pressed, and covered with Ni screens to form anodes used in batteries with sintered Ni cathodes. All these batteries, especially those with Ca_{0.9}Y_{0.1}Ni₅, Ca_{0.9}Zr_{0.1}Ni₅, Ca_{0.8}Ti_{0.1}Zr_{0.1}Ni_{4.8}Al_{0.2} anodes, had longer cycle lives than a battery using a CaNi₅ anode.

IT 105778-29-8
(hydrogen-absorbing, anodes, for alkaline batteries)

RN 105778-29-8 HCAPLUS

CN Nickel alloy, base, Ni 86,Ca 12,Si 1.7 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ni	86	7440-02-0
Ca	12	7440-70-2
Si	1.7	7440-21-3

IC ICM H01M004-38
ICA C22C019-03
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56

IT **Anodes**
(battery, hydrogen-absorbing calcium-nickel alloy)

IT 105778-23-2 105778-24-3 105778-25-4 105778-26-5 105778-27-6
105778-28-7 105778-29-8 105778-30-1 105778-31-2
105778-32-3 105778-33-4 105778-34-5 105778-35-6 105778-36-7
105778-37-8 105778-38-9 105778-39-0 105778-40-3 105778-41-4
105778-42-5 105778-43-6 105778-44-7 105778-45-8 106642-83-5
(hydrogen-absorbing, anodes, for alkaline batteries)

L52 ANSWER 41 OF 41 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1987:7557 HCAPLUS
DOCUMENT NUMBER: 106:7557
TITLE: Metal-hydrogen alkaline battery
INVENTOR(S): Furukawa, Saneshiro; Murakami, Shuzo; Matsumoto, Takanao
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 61168870	A	19860730	JP 1985-7740	19850119
PRIORITY APPLN. INFO.: JP 1985-7740 19850119				

ED Entered STN: 11 Jan 1987
AB A misch metal-Co alloy containing Al, Si, Ti, V, Cr, Mn, Ni, Fe, Cu, Zn,

Y, Zr, Nb, Mo, Hf, Ta, and/or alkaline earth element and having a similar crystalline structure as CaCu₅ is used as H-absorbing anode material in the title battery. Thus, M_{1-x}M'_xCo_{5-y}M''_y (where M = La, Ce, Pr, Nd, Sm, and/or Gd; M' = Ti, Y, Zr, Nb, Mo, Hf, Ta, Mg, Ca, Sr, or Ba; x = 0 or 0.1; M'' = Al, Mn, Si, V, Cr, Ni, Fe, Cu, or Zn; and y = 0 or 0.2) were mixed with acetylene black and a fluoeresin, pressed, and covered with Ni screens to form anodes for batteries using sintered Ni cathodes. All batteries having anodes of compns. with x = 0.1 and/or y = 0.2 showed higher discharge capacities and longer cycle lives than batteries having x and y = 0.

IT 105778-61-8

(hydrogen-absorbing, anodes, for alkaline batteries)

RN 105778-61-8 HCAPLUS

CN Cobalt alloy, base, Co 66,La 32,Si 1.3 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Co	66	7440-48-4
La	32	7439-91-0
Si	1.3	7440-21-3

IC ICM H01M004-38

ICA C22C019-07

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 56

IT Anodes

(battery, hydrogen-absorbing misch metal-cobalt alloy)

IT 105778-53-8	105778-54-9	105778-55-0	105778-56-1	105778-57-2
105778-58-3	105778-59-4	105778-60-7	105778-61-8	
105778-62-9	105778-63-0	105778-64-1	105778-65-2	105778-66-3
105778-67-4	105778-68-5	105778-69-6	105778-70-9	105778-71-0
105778-72-1	105778-73-2	105778-74-3	105778-75-4	105778-76-5
105778-77-6	105778-78-7	105778-79-8	105778-80-1	105810-48-8

(hydrogen-absorbing, anodes, for alkaline batteries)

=> => d que 153

L3	1	SEA FILE=REGISTRY	ABB=ON	PLU=ON	CENIS12/MF
L10	18752	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	"BATTERY ANODES"+PFT,NT,OLD,NEW/CT
L11	24086	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	"BATTERY CATHODES"+PFT,NT,OLD,NEW/CT
L12	9464	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	"BATTERY ELECTROLYTES"+PFT,NT,OLD,NEW/CT
L13	71770	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	"SECONDARY BATTERIES"+PFT,NT,OLD,NEW/CT
L19	24	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L3
L20	0	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L19 AND (L10 OR L11 OR L12 OR L13)
L21	0	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L19 AND (ELECTROD? OR BATTER? OR CATHOD? OR ANOD?)
L22	0	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L19 AND ELECTROCHEM?/SC,SX
L23	24	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	(L19 OR L20 OR L21 OR L22)
L24	1	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L23 AND LATTICE CONSTANT?
L25	0	SEA FILE=HCAPLUS	ABB=ON	PLU=ON	L23 AND CRYSTAL AXES?

L26 24 SEA FILE=HCAPLUS ABB=ON PLU=ON (L23 OR L24 OR L25)
 L53 20 SEA FILE=HCAPLUS ABB=ON PLU=ON L26 AND (1840-2003)/PRY,A
 Y,PY

=> d 153 1-20 ibib ed abs hitstr hitind

L53 ANSWER 1 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:544003 HCAPLUS

DOCUMENT NUMBER: 139:253994

TITLE: Transport and magnetic properties of CeNiGe₂-xSix
 single crystals

AUTHOR(S): Hong, S. O.; Mun, E. D.; Kwon, Y. S.

CORPORATE SOURCE: BK21 Physics Research Division and Institute of
 Basic Science, Sungkyunkwan University, Suwon,
 440-746, S. Korea

SOURCE: Physica B: Condensed Matter (Amsterdam,
 Netherlands) (2003), 329-333 (Pt. 2),
 514-515

CODEN: PHYBE3; ISSN: 0921-4526

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 16 Jul 2003

AB The elec. resistivity and the magnetic susceptibility have been
 measured for the series of intermetallic compds. CeNiGe₂-xSix.
 CeNiGe₂ is an antiferromagnetic compound with TN = 3.3 K. CeNiSi₂ is an
 intermediate-valence compound with cerium valence varying from 3.4 at
 room temperature to 3.75 at 1.8 K. With increasing x, the coupling constant J
 is enhanced and thus the Kondo temperature TK increases.

IT 12442-41-0, Cerium nickel silicide (CeNiSi₂)
 (transport and magnetic properties of CeNiGe₂-xSix single crystals)

RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide (CeNiSi₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

Answer set L53

1-20 references

for the compound

of formula CeNiSi₂

CC 77-1 (Magnetic Phenomena)

IT 12442-41-0, Cerium nickel silicide (CeNiSi₂) 130005
 597564-76-6, Cerium germanium nickel silicide (CeGe_{1.8}NiSi_{0.2})
 597564-77-7, Cerium germanium nickel silicide (CeGe_{1.6}NiSi_{0.4})
 597564-78-8, Cerium germanium nickel silicide (CeGe_{0.8}NiSi_{1.2})
 597564-79-9, Cerium germanium nickel silicide (CeGe_{1.4}NiSi_{0.6})
 597564-80-2, Cerium germanium nickel silicide (CeGeNiSi)
 597564-81-3, Cerium germanium nickel silicide (CeGe_{0.2}NiSi_{1.8})
 (transport and magnetic properties of CeNiGe₂-xSix single crystals)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L53 ANSWER 2 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:128025 HCAPLUS

DOCUMENT NUMBER: 138:377651

TITLE: Anderson lattice in CeNiSi₂ intermediate valence
 compound

AUTHOR(S): Mun, E. D.; Kwon, Y. S.; Jung, M. H.
 CORPORATE SOURCE: BK21 Physics Research Division and Institute of
 Basic Science, SungKyunKwan University, Suwon,
 440-746, S. Korea
 SOURCE: Physical Review B: Condensed Matter and Materials
 Physics (2003), 67(3), 033103/1-033103/3
 CODEN: PRBMDO; ISSN: 0163-1829
 PUBLISHER: American Physical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

ED Entered STN: 20 Feb 2003

AB The authors present exptl. results of elec. resistivity, Hall coefficient, magnetic susceptibility, and sp. heat for single crystals of the Ce-based intervalent compound CeNiSi₂. The results show similar behaviors observed in Yb-based intervalent compds. and support a recent theory of the Anderson lattice, in which the Fermi-liquid coherence is global over the whole lattice. There is a low-temperature scale T_{coh} .apprx. 50 K for the onset of Fermi-liquid coherence, in addition to a high-temperature scale TK* .apprx. 150 K for the Kondo lattice condensation. Therefore, the authors conclude that two energy scales are generic in intermediate valence compds. based on Ce where the orbital degeneracy is smaller and where the size of the 4f-orbital is larger than those based on Yb.

IT 12442-41-0, Cerium Nickel silicide (CeNiSi₂)
 (Anderson lattice in CeNiSi₂ intermediate valence compound)

RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide (CeNiSi₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 77-1 (Magnetic Phenomena)

Section cross-reference(s): 69, 76

IT 12442-41-0, Cerium Nickel silicide (CeNiSi₂)
 (Anderson lattice in CeNiSi₂ intermediate valence compound)

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L53 ANSWER 3 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:515530 HCAPLUS

DOCUMENT NUMBER: 137:255734

TITLE: Anderson lattice in CeNiSi₂ intermediate valence
 compound

AUTHOR(S): Hong, S. O.; Kwon, Y. S.; Jung, M. H.

CORPORATE SOURCE: BK21 Physics Research Division and Institute of
 Basic Science, SungKyunKwan University, Suwon,
 440-746, S. Korea

SOURCE: Los Alamos National Laboratory, Preprint Archive,
 Condensed Matter (2002) 1-8,
 arXiv:cond-mat/0207240, 9 Jul 2002
 CODEN: LNCMFR

URL: <http://xxx.lanl.gov/pdf/cond-mat/0207240>

PUBLISHER: Los Alamos National Laboratory

DOCUMENT TYPE: Preprint

LANGUAGE: English

ED Entered STN: 11 Jul 2002

AB The authors present exptl. results of elec. resistivity, Hall coefficient, magnetic susceptibility, and sp. heat for single crystals of the Ce-based intervalent compound CeNiSi₂. The results show similar behaviors observed in Yb-based intervalent compds. and support recent theory of the Anderson lattice, in which the Fermi-liquid coherence is global over the whole lattice. There is a low-temperature scale T_{coh} of .apprx.50 K for the onset of Fermi-liquid coherence, in addition to a high-temperature scale TK* of .apprx.150 K for the Kondo-lattice condensation. Therefore, the authors conclude that two energy scales are generic in intermediate valence compds. based on Ce where the orbital degeneracy is smaller and where the size of the 4f orbital is larger than those based on Yb.

IT 12442-41-0, Cerium Nickel silicide (CeNiSi₂)
(Anderson lattice in CeNiSi₂ intermediate valence compound)

RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide (CeNiSi₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 76-1 (Electric Phenomena)

Section cross-reference(s): 69, 77

IT 12442-41-0, Cerium Nickel silicide (CeNiSi₂)
(Anderson lattice in CeNiSi₂ intermediate valence compound)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L53 ANSWER 4 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:284916 HCAPLUS

DOCUMENT NUMBER: 134:360491

TITLE: Magnetism of intermetallic compounds of RTX₂ type
(R - rare earth metal, T - transition metal, X =
Si, Ge)

AUTHOR(S): Gil, A.; Tubielewicz, K.

CORPORATE SOURCE: Wyzsza Szkola Pedagog., Czestochowa, Pol.

SOURCE: Metallofizika i Noveishie Tekhnologii (
2001), 23(2), 153-165

CODEN: MNTEEU; ISSN: 1024-1809

PUBLISHER: Natsional'na Akademiya Nauk Ukraini, Institut
Metallofiziki im. G. V. Kurdyumova

DOCUMENT TYPE: Journal

LANGUAGE: Russian

ED Entered STN: 23 Apr 2001

AB Exptl. results and theor. prediction of structural and magnetic properties of RNiX₂ (X = Si, Ge) and RMnxGe₂ compds. are presented. A large number of RTX₂ compds. crystallize in the orthorhombic CeNiSi₂-type structure. Magnetic susceptibility data indicate that the RNiX₂ compds. with R = Pr, Nd are ferromagnetics and with R = Gd, Tb, Dy, Ho, Er are antiferromagnetics at low temps.; the RMnxGe₂ compds. with R = Nd, Gd, Tb, Dy and Ho are antiferromagnetics at low temps., whereas those with R = Sm and Er are paramagnetics up to 4.2 K. The exptl. results are discussed in terms of the RKKY theory and crystal elec. field effects.

IT 12442-41-0, Cerium nickel silicide (CeNiSi₂)

(magnetism and structure of $RNiSi_2$ and $RTGe_2$ type intermetallic compds. (R - rare earth metal, T - Ni, Mn))

RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide ($CeNiSi_2$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 77-1 (Magnetic Phenomena)

IT 12442-41-0, Cerium nickel silicide ($CeNiSi_2$) 12444-55-2,
Dysprosium nickel silicide ($DyNiSi_2$) 12444-62-1, Erbium nickel
silicide ($ErNiSi_2$) 12500-15-1, Gadolinium nickel silicide ($GdNiSi_2$)
12502-05-5, Holmium nickel silicide ($HoNiSi_2$) 12503-32-1, Neodymium
nickel silicide ($NdNiSi_2$) 12503-38-7, Nickel praseodymium silicide
($NiPrSi_2$) 12503-41-2, Nickel samarium silicide ($NiSmSi_2$)
12503-42-3, Nickel terbium silicide ($NiTbSi_2$) 130005-48-0
130005-50-4 130005-51-5 130005-52-6 142069-69-0 153143-81-8
153143-82-9 154668-59-4 154668-60-7 155103-09-6 155103-10-9
155103-11-0 155103-12-1 155103-13-2 155103-14-3 155103-15-4
202134-95-0 202134-97-2 339176-22-6 339176-23-7 339176-24-8
339176-25-9 339176-27-1

(magnetism and structure of $RNiSi_2$ and $RTGe_2$ type intermetallic compds. (R - rare earth metal, T - Ni, Mn))

L53 ANSWER 5 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:639654 HCAPLUS

DOCUMENT NUMBER: 129:338881

TITLE: The double nature of the $ErNiSi_2$ magnetic
structure neutron diffraction and magnetic
measurements

AUTHOR(S): Schobinger-Papamantellos, P.; Buschow, K. H. J.;
Wilkinson, C.; Fauth, F.; Ritter, C.

CORPORATE SOURCE: Laboratorium fur Kristallographie, ETHZ, Zurich,
CH-8092, Switz.

SOURCE: Journal of Magnetism and Magnetic Materials (
1998), 189(2), 214-224

CODEN: JMMMD; ISSN: 0304-8853

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 09 Oct 1998

AB The magnetic phase diagram of the compound $ErNiSi_2$ of $CeNiSi_2$ structure
type (Cmcm, space group) was studied by neutron diffraction and
magnetic measurements. The paramagnetic neutron data confirmed the
sample homogeneity. The anal. of the data collected in the
magnetically ordered regime ($T_N = 3.4$ K) showed the existence of two
distinct types of magnetic ordering associated with the wave vectors $q_1 =$
($1/2, 0, 0$) and $q_2 = (q_x, q_y, q_z)$ which are not related by symmetry.
The q_1 phase corresponds to a uniaxial antiferromagnetic arrangement
of the Er moments along b associated with a 2a cell enlargement. The
refined moment value at 1.5 K is $\mu_{Er} = 7.6(1) \mu_B$. This ordering
is stable only below $T_1 = 1.8$ K. Above T_1 , a 1st-order transition
accompanied by hysteresis effects, leads to the appearance of a 2nd
set of magnetic reflections. These reflections are associated with a
wave vector in a general reciprocal lattice position $q_2 = (q_x, q_y, q_z)$
that has a temperature dependent length and orientation. At T_1 the two

phases coexist and are present in equal amts. The wave vector components of the q2 phase at T1 are $q_x = 0.1262(3)$, $q_y = 0.022(2)$ and $q_z = 0.2273(3)$ r.l.u. The structure corresponds to a sine wave modulated structure with an amplitude of 5.31 μB polarized along b. This structure dominates the high-temperature region, $T > T_1$. Below T1 it is still present as a metastable phase but its relative amount decreases with decreasing temperature. The same holds for the q1 phase which exists as a metastable phase above T1. The coexistence region on heating spans the interval $T_1 \pm 0.45$ K.

IT 12442-41-0, Cerium nickel silicide (CeNiSi_2)
(neutron diffraction studies of magnetic structure of ErNiSi_2 and CeNiSi_2 by neutron diffraction and magnetic measurements)
RN 12442-41-0 HCAPLUS
CN Cerium nickel silicide (CeNiSi_2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 77-1 (Magnetic Phenomena)

IT 12442-41-0, Cerium nickel silicide (CeNiSi_2) 12444-62-1,
Erbium nickel silicide (ErNiSi_2)
(neutron diffraction studies of magnetic structure of ErNiSi_2 and CeNiSi_2 by neutron diffraction and magnetic measurements)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L53 ANSWER 6 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:118285 HCAPLUS

DOCUMENT NUMBER: 128:262216

TITLE: Analysis of the melting temperatures of RTX_2
(CeNiSi_2 structure) and RT_2X_2 (CeGa_2Al_2 structure)
compounds [R = La, Ce, Sm, Er, Tm; T = Fe, Co, Ni;
X = Si, Ge]

AUTHOR(S): Morozkin, A. V.; Seropegin, Yu. D.; Gribanov, A.
V.; Sviridov, I. A.; Kurenbaeva, J. M.; Kurenbaev,
A. L.

CORPORATE SOURCE: Vorobiev Gory, Department of Chemistry, Moscow.
Lomonosov State University, Moscow, GSP-3, 119899,
Russia

SOURCE: Journal of Alloys and Compounds (1998),
264(1-2), 190-196
CODEN: JALCEU; ISSN: 0925-8388

PUBLISHER: Elsevier Science S.A.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 27 Feb 1998

AB Physicochem. anal. techniques, including x-ray phase anal. and DTA
were employed for the characterization of compds. including their
melting temperature. The melting temperature of 23 RT_2X_2 compds. belonging to
the

CeGa_2Al_2 structure has been measured. The melting temperature of 19 RTX_2
compds. belonging to the CeNiSi_2 structure has been measured (LaCoSi_2 ,
 LaNiSi_2 , CeFeSi_2 , CeCoSi_2 , CeNiSi_2 , SmCoSi_2 , SmNiSi_2 , ErCoSi_2 ,
 ErNiSi_2 , TmCoSi_2 , TmNiSi_2 , LaCoGe_2 , LaNiGe_2 , CeFeGe_2 , CeCoGe_2 ,
 CeNiGe_2 , SmFeGe_2 , SmCoGe_2 , SmNiGe_2). It is established, that the new

ternary compound SmCoSi_2 belongs to the CeNiSi_2 structure type (group Cmcn, $a = 0.4088(1)$ nm, $b = 1.6320(3)$ nm, $c = 0.4008(1)$ nm).

IT 12442-41-0, Cerium nickel silicide (CeNiSi_2)
(melting temps. of RTX_2 (CeNiSi_2 structure) and RT_2X_2 (CeGa_2Al_2 structure) compds. [$R = \text{La, Ce, Sm, Er, Tm}$; $T = \text{Fe, Co, Ni}$; $X = \text{Si, Ge}$])

RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide (CeNiSi_2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 65-6 (General Physical Chemistry)

Section cross-reference(s): 56, 69, 75

IT 12205-48-0, Cerium cobalt silicide (CeCo_2Si_2) 12205-50-4, Cerium iron silicide (CeFe_2Si_2) 12205-51-5 12205-55-9, Cerium nickel silicide (CeNi_2Si_2) 12206-59-6, Erbium nickel silicide (ErNi_2Si_2) 12209-09-5, Lanthanum nickel silicide (LaNi_2Si_2) 12210-28-5, Nickel samarium silicide (Ni_2SmSi_2) 12210-30-9, Nickel thulium silicide (Ni_2TmSi_2) 12432-28-9, Cerium cobalt silicide (CeCoSi_2) 12442-38-5 12442-40-9 12442-41-0, Cerium nickel silicide (CeNiSi_2) 12444-61-0 12444-62-1, Erbium nickel silicide (ErNiSi_2) 12500-39-9 12500-53-7, $\text{Ge}_2\text{Ni}_2\text{Sm}$ 12500-55-9, $\text{Ge}_2\text{Ni}_2\text{Tm}$ 12503-41-2, Nickel samarium silicide (NiSmSi_2) 12503-43-4, Nickel thulium silicide (NiTmSi_2) 12508-80-4, Lanthanum nickel silicide (LaNiSi_2) 12515-25-2, Cerium iron silicide (CeFeSi_2) 50811-27-3 50811-30-8 50811-34-2 50811-36-4 60616-42-4, Cobalt erbium silicide (Co_2ErSi_2) 60616-45-7, Cobalt samarium silicide (Co_2SmSi_2) 67115-33-7, Cobalt lanthanum silicide (Co_2LaSi_2) 82445-77-0, Cobalt lanthanum silicide (CoLaSi_2) 84400-11-3, Cobalt erbium silicide (CoErSi_2) 84400-14-6, Cobalt samarium silicide (CoSmSi_2) 84400-16-8, Cobalt thulium silicide (CoTmSi_2) 84721-09-5, Cobalt thulium silicide (Co_2TmSi_2) 86944-68-5, $\text{Fe}_2\text{Ge}_2\text{Sm}$ 130005-48-0 130005-49-1, Ge_2LaNi 130005-50-4 205173-32-6, CoGe_2La 205173-33-7, CeFeGe_2 205173-34-8, CeCoGe_2 205173-35-9, FeGe_2Sm 205173-36-0, CoGe_2Sm
(melting temps. of RTX_2 (CeNiSi_2 structure) and RT_2X_2 (CeGa_2Al_2 structure) compds. [$R = \text{La, Ce, Sm, Er, Tm}$; $T = \text{Fe, Co, Ni}$; $X = \text{Si, Ge}$])

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L53 ANSWER 7 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:417264 HCAPLUS

DOCUMENT NUMBER: 125:128638

TITLE: How the anisotropy of transport and magnetic properties changes with TK as evidenced in CePtSi_2 and CeNiSi_2

AUTHOR(S): Kasaya, M.; Ito, M.; Ono, A.; Sakai, O.

CORPORATE SOURCE: Department of Physics, Faculty of Science, Tohoku University, Sendai, 980, Japan

SOURCE: Physica B: Condensed Matter (Amsterdam) (1996), 223&224(1-4), 336-339

CODEN: PHYBE3; ISSN: 0921-4526

PUBLISHER: Elsevier

DOCUMENT TYPE: Journal
 LANGUAGE: English
 ED Entered STN: 16 Jul 1996
 AB The authors have prepared single crystals of orthorhombic compds. CePtSi₂ and CeNiSi₂. From the transport and magnetic susceptibility measurements, it is found that CePtSi₂ is a Kondo compound with low TK, whereas CeNiSi₂ is a mixed-valent compound with high TK. The peculiar results are that CePtSi₂ shows strong anisotropy in the temperature dependence of magnetic and transport properties, but CeNiSi₂ shows weak anisotropy. These results are discussed in terms of TK and crystalline field splitting.
 IT 12442-41-0, Cerium nickel silicide (CeNiSi₂)
 (how anisotropy of transport and magnetic properties changes with TK as evidenced in CePtSi₂ and CeNiSi₂)
 RN 12442-41-0 HCAPLUS
 CN Cerium nickel silicide (CeNiSi₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 76-1 (Electric Phenomena)
 Section cross-reference(s): 77
 IT 12442-41-0, Cerium nickel silicide (CeNiSi₂) 131576-91-5,
 Cerium platinum silicide (CePtSi₂)
 (how anisotropy of transport and magnetic properties changes with TK as evidenced in CePtSi₂ and CeNiSi₂)

L53 ANSWER 8 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1996:101311 HCAPLUS
 DOCUMENT NUMBER: 124:159358
 TITLE: High-energy-resolution photoemission study of CeNiSi₂ and CePtSi₂
 AUTHOR(S): Kumigashira, H.; Chainani, A.; Yokoya, T.; Akaki, O.; Takahashi, T.; Ito, M.; Kasaya, M.; Sakai, O.
 CORPORATE SOURCE: Dep. Phys., Tohoku Univ., Sendai, 980-77, Japan
 SOURCE: Physical Review B: Condensed Matter (1996), 53(5), 2565-8
 CODEN: PRBMDO; ISSN: 0163-1829
 PUBLISHER: American Physical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

ED Entered STN: 17 Feb 1996
 AB We studied the electronic structure of isostructural CeNiSi₂ and CePtSi₂ using high-resolution low-temperature photoemission spectroscopy. CeNiSi₂ is a typical valence fluctuation material, while CePtSi₂ is a low TK(.apprx.10 K) heavy-fermion system. The valence-band spectra show that Ni 3d derived states appear at energies closer to the Fermi level (EF) compared to the Pt 5d derived states. The near-EF spectra exhibit the characteristic spin-orbit splitting of 4f states (4f_{5/2} and 4f_{7/2}), with higher 4f_{5/2} intensity in CeNiSi₂ than in CePtSi₂. Numerical simulations based on the single-impurity Anderson model show that the hybridization between the conduction band and f electrons is stronger in CeNiSi₂ than in CePtSi₂. This is qual. understood in terms of proximity of Ni 3d states to the f level. The obtained spectroscopic results were discussed in comparison with transport and magnetic measurements.

IT 12442-41-0, Cerium nickel silicideCeNiSi2
 (high-energy-resolution photoemission study of CeNiSi2 and CePtSi2)
 RN 12442-41-0 HCAPLUS
 CN Cerium nickel silicide (CeNiSi2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 73-6 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT 12442-41-0, Cerium nickel silicideCeNiSi2 131576-91-5,
 Cerium platinum silicideCePtSi2
 (high-energy-resolution photoemission study of CeNiSi2 and CePtSi2)

L53 ANSWER 9 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1994:287922 HCAPLUS

DOCUMENT NUMBER: 120:287922

TITLE: Magnetic properties of RNiSi2 and CeNiGe2 compounds

AUTHOR(S): Gil, A.; Szytula, A.; Tomkowicz, Z.;
 Wojciechowski, K.; Zygmunt, A.

CORPORATE SOURCE: Institute of Physics, Cracow Technical University,
 Cracow, Pol.

SOURCE: Journal of Magnetism and Magnetic Materials (1994), 129(2-3), 271-8

CODEN: JMMMD; ISSN: 0304-8853

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 28 May 1994

AB The series of ternary silicides and germanides RNiX2 (R-rare earth, X = Si or Ge) with an orthorhombic CeNiSi2-type structure have been investigated by X-ray diffraction and magnetometric measurements. CeNiSi2 is a mixed valence system and SmNiGe2 has a nonmagnetic state at low temps. CeNiGe2 and SmNiSi2 are antiferromagnets. The compds. with R = Pr and Nd are ferromagnets while those containing R = Gd, Tb, Dy, Ho and Er are antiferromagnets with a Neel temps. below 42 K. For both Si and Ge groups of compds. the Neel temps. do not follow de Gennes scaling. This behavior of TN can be understood on the basis of crystalline-elec. field effects.

IT 12442-41-0, Cerium nickel silicide (CeNiSi2)
 (magnetic properties of)

RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide (CeNiSi2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 77-1 (Magnetic Phenomena)

IT 12442-41-0, Cerium nickel silicide (CeNiSi2) 12444-55-2,
 Dysprosium nickel silicide (DyNiSi2) 12444-62-1, Erbium nickel
 silicide (ErNiSi2) 12500-15-1, Gadolinium nickel silicide (GdNiSi2)
 12502-05-5, Holmium nickel silicide (HoNiSi2) 12503-32-1, Neodymium

nickel silicide (NdNiSi₂) 12503-38-7, Nickel praseodymium silicide (NiPrSi₂) 12503-41-2, Nickel samarium silicide (NiSmSi₂) 12503-42-3, Nickel terbium silicide (NiTbSi₂) 130005-48-0 130005-50-4 130005-51-5 130005-52-6 142069-69-0 153143-81-8 153143-82-9 154668-59-4 154668-60-7
(magnetic properties of)

L53 ANSWER 10 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1994:259400 HCAPLUS

DOCUMENT NUMBER: 120:259400

TITLE: Susceptibility of the rare earth ternary RNiSi₂ and RNiGe₂ compounds

AUTHOR(S): Gil, A.; Szytula, A.; Tomkowicz, Z.; Wojciechowski; Zygmunt, A.

CORPORATE SOURCE: Inst. Phys., Cracow Tech. Univ., Krakow, 30-074, Pol.

SOURCE: Acta Physica Polonica, A (1994), 85(2), 271-4

CODEN: ATPLB6; ISSN: 0587-4246

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 14 May 1994

AB The ternary silicides and germanides RNiX₂ (R = rare earth, X = Si or Ge) with the orthorhombic CeNiSi₂-type structure were studied by magnetometric measurements. CeNiSi₂-type structure were studied by magnetometric measurements. CeNiSi₂, CeNiGe₂ and SmNiGe₂ have a nonmagnetic state at low temps. The compds. with R = Pr and Nd are ferromagnets while those containing R = Gd-Er are antiferromagnets. The de Gennes scaling of the Neel temps. indicates a strong influence of the crystal-elec. field effects.

IT 12442-41-0, Cerium nickel silicide (CeNiSi₂)
(magnetic susceptibility of)

RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide (CeNiSi₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 77-1 (Magnetic Phenomena)

IT 12442-41-0, Cerium nickel silicide (CeNiSi₂) 12444-55-2, Dysprosium nickel silicide (DyNiSi₂) 12444-62-1, Erbium nickel silicide (ErNiSi₂) 12500-15-1, Gadolinium nickel silicide (GdNiSi₂) 12502-05-5, Holmium nickel silicide (HoNiSi₂) 12503-32-1, Neodymium nickel silicide (NdNiSi₂) 12503-38-7, Nickel praseodymium silicide (NiPrSi₂) 12503-41-2, Nickel samarium silicide (NiSmSi₂) 12503-42-3, Nickel terbium silicide (NiTbSi₂) 130005-48-0, Ge₂NiSm 130005-50-4, CeGe₂Ni 130005-51-5, Ge₂NiPr 130005-52-6, Ge₂NdNi 142069-69-0, Ge₂NiTb 153143-81-8 153143-82-9, ErGe₂Ni 154668-59-4, GdGe₂Ni 154668-60-7, DyGe₂Ni
(magnetic susceptibility of)

L53 ANSWER 11 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1992:226475 HCAPLUS

DOCUMENT NUMBER: 116:226475

TITLE: Magnetic ordering in the heavy-fermion compounds cerium platinum silicide (CePtSi₂) and

AUTHOR(S): cerium-nickel-germanium (CeNiGe2)
Geibel, C.; Kaemmerer, C.; Seidel, B.; Bredl, C.
D.; Grauel, A.; Steglich, F.
CORPORATE SOURCE: Inst. Festkoerperphys., Tech. Hochsch. Darmstadt,
Darmstadt, W-6100, Germany
SOURCE: Journal of Magnetism and Magnetic Materials (1992), 108(1-3), 207-8
CODEN: JMMMD; ISSN: 0304-8853
DOCUMENT TYPE: Journal
LANGUAGE: English

ED Entered STN: 31 May 1992

AB The ground state of three CeTMX₂ compds. with CeNiSi₂ structure type was investigated by waking elec.-resistivity, magnetic-susceptibility and specific-heat measurements. Whereas CeNiSi₂ is an intermediate-valent system, in CePtSi₂ and CeNiGe₂ magnetic ordering in the presence of heavy fermions is observed. The trends in heavy-fermion formation on going from either the 111 or 122 to the 112 compds. are discussed.

IT 12442-41-0, Cerium nickel silicide (CeNiSi₂)
(elec. resistivity of, temperature dependence of)

RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide (CeNiSi₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 77-1 (Magnetic Phenomena)

IT 12442-41-0, Cerium nickel silicide (CeNiSi₂)
(elec. resistivity of, temperature dependence of)

L53 ANSWER 12 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1991:420592 HCAPLUS

DOCUMENT NUMBER: 115:20592

TITLE: Low-temperature heat capacity and magnetic properties of the RNiX₂ compounds (R = La, Ce; X = Si, Ge, Sn)

AUTHOR(S): Pecharskii, V. K.; Gschneidner, K. A., Jr.;
Miller, L. L.

CORPORATE SOURCE: Dep. Mater. Sci. Eng., Iowa State Univ., Ames, IA,
50011, USA

SOURCE: Physical Review B: Condensed Matter and Materials Physics (1991), 43(13-B), 10906-14
CODEN: PRBMDO; ISSN: 0163-1829

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 12 Jul 1991

AB Heat-capacity (1.4-80 K) and magnetic-susceptibility (1.5-300 K) measurements were carried out for the series of 6 ternary intermetallic compds. with RNiX₂ composition (R = La, Ce and X = Si, Ge, and Sn). All of the LaNiX₂ compds. exhibit normal metallic behavior with an electronic specific-heat coefficient in the range 5.2-5.6 mJ/mol K² and Debye temperature decreasing from 451 K (LaNiSi₂) to 258 K (LaNiSn₂). The CeNiX₂ compds. display anomalous behaviors. CeNiSi₂ is an intermediate-valence compound at high temps. with the Ce valence varying from 3.35+ at room temperature to 3.65+ at T = 50 K, and becomes a spin fluctuator at low (around 3.3 K) temperature. The spin fluctuations can be

quenched by an external magnetic field of about 5.3 T. Both CeNiGe₂ and CeNiSn₂ undergo 2-step antiferromagnetic phase transitions at TNII = 3.9 K and TNI = 3.2 K, which are accompanied by sharp anomalies for all properties studied. The electronic specific-heat consts. (in units of mJ/mol Ce K²) of the 3 Ce compds. are 45.3 ± 0.6 for CeNiSi₂, 97.6 ± 0.9 for CeNiGe, and 60.8 ± 0.7 for CeNiSn₂.

IT 12442-41-0, Cerium nickel silicide (CeNiSi₂)
(crystal structure and thermodyn. properties and magnetic properties of)
RN 12442-41-0 HCAPLUS
CN Cerium nickel silicide (CeNiSi₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 77-1 (Magnetic Phenomena)
IT 12442-41-0, Cerium nickel silicide (CeNiSi₂) 116066-77-4
116066-78-5 130005-49-1, Ge₂LaNi 130005-50-4, CeGe₂Ni
(crystal structure and thermodyn. properties and magnetic properties of)

L53 ANSWER 13 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1990:506783 HCAPLUS

DOCUMENT NUMBER: 113:106783

TITLE: New isotypes of cerium nickel silicide (CeNiSi₂)
in the systems R-M-X (R = lanthanum-lutetium, M =
metals of Groups 7-11 and X = germanium, tin). II.
Interpretation of their nonstoichiometry

AUTHOR(S): Venturini, G.; Francois, M.; Malaman, B.; Roques,
B.

CORPORATE SOURCE: Lab. Chim. Solide Miner., Univ. Nancy I,
Vandoeuvre les Nancy, 54506, Fr.

SOURCE: Journal of the Less-Common Metals (1990
, 160(2), 215-28
CODEN: JCOMAH; ISSN: 0022-5088

DOCUMENT TYPE: Journal

LANGUAGE: French

ED Entered STN: 16 Sep 1990

AB An interpretation of the differences in composition between
nonstoichiometric RM_xX₂ germanides and stannides is proposed. The
CeNiSi₂-type structure of these compds. can be described as the result
of M intercalations in square pyramidal sites of ZrSi₂-type RX₂
frameworks. These insertions depend not only on the relative size of
the host sites and guest M atoms but also on the interactions between
these M atoms and some of their R next neighbors. The affinity of the
M atoms for the R rare earths increases with their atomic number in each of
the 4th and 5th periods. In the X₁-X₁ chains, chemical bonding varies
according to M; it is very strong in the Cu compds.

IT 12442-41-0, Cerium nickel silicide (CeNiSi₂)
(isotypism of rare earth transition metal germanides and stannides
with, interpretation of, nonstoichiometry in relation to)

RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide (CeNiSi₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
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Component	Ratio	Component Registry Number
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 75-7 (Crystallography and Liquid Crystals)

Section cross-reference(s): 78

IT 12442-41-0, Cerium nickel silicide (CeNiSi₂)

(isotypism of rare earth transition metal germanides and stannides with, interpretation of, nonstoichiometry in relation to)

L53 ANSWER 14 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1989:601938 HCAPLUS

DOCUMENT NUMBER: 111:201938

TITLE: Cerium valence in ternary d-metal silicides

AUTHOR(S): Levin, E. M.; Bodak, O. I.; Finkel'shtein, L. D.

CORPORATE SOURCE: L'vov. Gos. Univ., Lvov, USSR

SOURCE: Fizika Tverdogo Tela (Sankt-Peterburg) (1989), 31(2), 214-16

CODEN: FTVTAC; ISSN: 0367-3294

DOCUMENT TYPE: Journal

LANGUAGE: Russian

ED Entered STN: 25 Nov 1989

AB The problem is considered of the intermediate valence of Ce in intermetallic compds. and silicides, CeMyX₂ with Mg = Fe, Ni, Co, and X₂ = Si, Ge, Sn. The valence of Ce changes in the interval 3.02-3.21 ± 0.03; it increases with the relative content of the d-metal in the compds. considered.

IT 12442-41-0, Cerium nickel silicide (CeNiSi₂)

(cerium valence in)

RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide (CeNiSi₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 65-3 (General Physical Chemistry)

IT 12157-64-1, Cerium nickel silicide (CeNiSi) 12205-48-0, Cerium cobalt silicide (CeCo₂Si₂) 12205-50-4, Cerium iron silicide (CeFe₂Si₂) 12205-51-5, Cerium compound with germanium and nickel (1:2:2) 12205-55-9, Cerium nickel silicide (CeNi₂Si₂) 12432-28-9, Cerium cobalt silicide (CeCoSi₂) 12442-41-0, Cerium nickel silicide (CeNiSi₂) 12515-20-7, Cerium cobalt silicide (CeCoSi) 12515-24-1, Cerium iron silicide (CeFeSi) 12515-25-2, Cerium iron silicide (CeFeSi₂) 81841-39-6, Cerium compound with nickel and tin (1:2:2) 122848-15-1, Cerium nickel silicide (CeNi_{0.2}Si_{0.2}) 122848-16-2, Cerium cobalt silicide (CeCo_{0.2}Si_{0.2}) 123516-85-8, Cerium iron silicide (CeFe_{0.1}Si_{0.1}) (cerium valence in)

L53 ANSWER 15 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1980:156371 HCAPLUS

DOCUMENT NUMBER: 92:156371

TITLE: Thermoelectromotive force and electroconductivity of cerium-metal-silicon system compounds (M = iron, cobalt, nickel)

AUTHOR(S): Bodak, O. I.; Levin, E. M.; Lutsiv, R. V.;
Yasnitskii, R. I.
CORPORATE SOURCE: L'vov. Gos. Univ., Lvov, USSR
SOURCE: Dopovidi Akademii Nauk Ukrain's'koi RSR, Seriya A:
Fiziko-Matematichni ta Tekhnichni Nauki (
1980), (2), 81-5
CODEN: DNUNDU; ISSN: 0002-3531
DOCUMENT TYPE: Journal
LANGUAGE: Ukrainian
ED Entered STN: 12 May 1984
AB The temperature coefficient of electromotive force and elec. conductivity were
determined for compds. of the
systems Ce-M-Si (M = Fe, Co, Ni). The maximum values of thermoemf. were
observed for CeCoSi₃, CeNiSi₂, and CeFeSi₂ (all containing 20-25 atomic % Ce).
The sign of the thermoemf. of CeM₂Si₂ and Ce₂FeSi₃, CeFeSi₂, and
CeCoSi changed at low temps. The compds. exhibit metallic type elec.
conductivity with spec. conductivity of 3200-1000 Ω⁻¹ cm⁻¹ at 290 K. The
anomalous kinetic coefficient of most investigated compds. is related with
s-f hybridization owing to the presence of 4f state near the Fermi
level of Ce.
IT 12442-41-0
(elec. conductivity and electromotive force of, temperature dependence of)
RN 12442-41-0 HCAPLUS
CN Cerium nickel silicide (CeNiSi₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====		=====
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 76-2 (Electric Phenomena)
IT 12157-75-4 12157-78-7 12205-48-0 12205-50-4 12205-55-9
12442-41-0 12442-42-1 12515-20-7 12515-21-8 12515-24-1
12515-25-2
(elec. conductivity and electromotive force of, temperature dependence of)

L53 ANSWER 16 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1978:162695 HCAPLUS
DOCUMENT NUMBER: 88:162695
TITLE: Magnetic properties of compounds of the
cerium-M-silicon (M = iron, cobalt, nickel) system
AUTHOR(S): Bodak, O. I.; Gladyshevskii, E. I.; Levin, E. M.;
Lutsiv, R. V.
CORPORATE SOURCE: L'viv. Derzh. Univ., Lvov, USSR
SOURCE: Dopovidi Akademii Nauk Ukrain's'koi RSR, Seriya A:
Fiziko-Matematichni ta Tekhnichni Nauki (
1977), (12), 1129-32
CODEN: DNUNDU; ISSN: 0002-3531
DOCUMENT TYPE: Journal
LANGUAGE: Ukrainian
ED Entered STN: 12 May 1984
AB The magnetic susceptibilities of the compds. were measured at 77-300
K. Paramagnetic Curie temps. and effective moments were determined
Changes in the magnetic properties of isostructural compds. with
3d-metal substitution are considered.
IT 12442-41-0
(magnetic properties of)
RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide (CeNiSi₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+	=====+	=====+
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 77-1 (Magnetic Phenomena)

IT 12014-85-6D, solid solns. with cerium-nickel compound 12050-83-8
 12157-64-1 12157-72-1 12157-75-4 12185-86-3D, solid solns. with
 cerium silicide 12205-48-0 12205-50-4 12205-55-9 12432-28-9
 12442-41-0 12442-42-1 12442-43-2 12506-55-7D, solid
 solns. with cerium silicide 12506-56-8D, solid solns. with
 cerium-nickel compound 12515-20-7 12515-21-8 12515-24-1
 12515-25-2 37279-90-6
 (magnetic properties of)

L53 ANSWER 17 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1973:458255 HCAPLUS

DOCUMENT NUMBER: 79:58255

TITLE: Cerium-nickel-silicon system containing 33.3-100
 atomic % cerium

AUTHOR(S): Bodak, O. I.; Mis'kiv, M. G.; Tyvanchuk, A. T.;
 Kharchenko, O. I.; Gladyshevskii, E. I.

CORPORATE SOURCE: L'vov. Gos. Univ. im. Franko, Lvov, USSR

SOURCE: Izvestiya Akademii Nauk SSSR, Neorganicheskie
 Materialy (1973), 9(5), 864-6
 CODEN: IVNMAW; ISSN: 0002-337X

DOCUMENT TYPE: Journal

LANGUAGE: Russian

ED Entered STN: 12 May 1984

AB Phase equilibrium in the Ce-Ni-Si system in the 33.3-100 atomic % Ce region
 are considered, the complete isothermal section of the given phase
 diagram is constructed, and the homogeneity region and crystalline
 structure of the compds. forming in these alloys in the 33.3-100 atomic %
 Ce is determined Ce for all practical purposes does not dissolve the other
 2 components. The binary compds. of the Ce-Si system are
 characterized by their capability to replace part of the Si atoms by
 the Ni atoms, and those of the Ce-Ni system are characterized by their
 capacity to replace Ni atoms by the Si atoms. The solubility of Si in the
 compds. of the Ce-Ni system in the region investigated does not exceed
 3 atomic %. Compound Ce₅Si₃ dissolves approx. 9 atomic % Ni. The observed
 lattice parameters thereby change: a goes from 7.890 to 7.850 Å,
 and c goes from 13.85 to 14.70 Å. The remaining compds. of the
 Ce-Ni system do not dissolve more than 3 atomic % Ni. Eight ternary
 compds. form in the investigated region of the Ce-Ni-Si system. With
 increased Ce content, the chemical activity of the given alloys
 increases. Most of the ternary compds. form acicular crystals.

IT 12442-41-0

(in ternary system)

RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide (CeNiSi₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+	=====+	=====+
Ce	1	7440-45-1
Si	2	7440-21-3

Ni | 1 | 7440-02-0

CC 68-1 (Phase Equilibriums, Chemical Equilibriums, and Solutions)

Section cross-reference(s): 70

IT 12050-83-8 12157-64-1 12205-55-9 12442-41-0 12442-42-1

12442-55-6 39432-16-1

(in ternary system)

L53 ANSWER 18 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1972:504767 HCAPLUS

DOCUMENT NUMBER: 77:104767

TITLE: Alloys of rare-earth metals with transition metals and silicon. Their prospective uses

AUTHOR(S): Bodak, O. I.; Gladyshevskii, E. I.

CORPORATE SOURCE: USSR

SOURCE: Redkozemel. Metal. Splavy, Vses. Soveshch.

Redkozemel. Elem., [Mater.], 6th (1971),

Meeting Date 1969, 67-72. Editor(s): Savitskii,

E. M. "Nauka": Moscow, USSR.

CODEN: 25CZAG

DOCUMENT TYPE: Conference

LANGUAGE: Russian

ED Entered STN: 12 May 1984

AB Phase equilibrium in 0-33 atomic % Ce-M-Si (M is Fe, Co, or Ni systems) were studied by x-ray and microscopic methods. Homogeneity regions in and crystal structure of compds. of these systems were determined Crystal structure parameters are tabulated for 13, 7, and 4 compds. in the Ce-Ni-Si, Ce-Co-Si, and Ce-Fe-Si systems, resp. Valency state of Ce in these compds. and their properties are discussed.

IT 12442-41-0P

(formation and crystal structure of)

RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide (CeNiSi₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 56-6 (Nonferrous Metals and Alloys)

Section cross-reference(s): 69

IT 12050-83-8P 12157-64-1P 12157-72-1P 12157-75-4P 12185-78-3P

12205-48-0P 12205-50-4P 12205-55-9P 12432-28-9P

12442-41-0P 12442-42-1P 12442-43-2P 12442-55-6P

12515-20-7P 12515-21-8P 12515-24-1P 37279-30-4P 37279-90-6P

37279-32-6D, Cerium silicide (CeSi₃), solid solution with CeFe₃

(formation and crystal structure of)

L53 ANSWER 19 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1970:71755 HCAPLUS

DOCUMENT NUMBER: 72:71755

TITLE: Crystal structure of CeNiSi₂ and related compounds

AUTHOR(S): Bodak, O. I.; Gladyshevskii, E. I.

CORPORATE SOURCE: L'vov. Gos. Univ., Lvov, USSR

SOURCE: Kristallografiya (1969), 14(6), 990-4

CODEN: KRISAJ; ISSN: 0023-4761

DOCUMENT TYPE: Journal

LANGUAGE: Russian

ED Entered STN: 12 May 1984

AB The lattice parameters of CeNiSi₂ were measured by the rotating-crystal method and refined by the powder method (Cr K radiation, $a = 4.141 \pm 0.005$, $b = 16.418 \pm 0.005$, $c = 4.068 \pm 0.005$ Å, d . (exptl.) = 5.98, d . (calculated) = 6.09, $Z = 4$). Cu K radiation, the 0kl, 1kl, hk0, and hkl Weissenberg diagrams, and Patterson projections indicated the space group D172h-Cmcm. Intensities of 49 hk0 reflections and of 47 0kl reflections were estimated visually and used for Fourier synthesis. All atoms occupy the 4(c) 0y1/4; parameters were refined by the least-squares method with residual factors $R_{0kl} = 13.3\%$ and $R_{hk0} = 15.8\%$ as follows: Ce:y = 0.1070 ± 0.0002 , $B = 0.85 \pm 0.05$; Ni:y = 0.3158 ± 0.0008 , $B = 2.95 \pm 0.17$; Si(1): $y = 0.4566 \pm 0.0020$, $B = 2.53 \pm 0.37$; Si(2): $y = 0.7492 \pm 0.0004$, $B = 0.79 \pm 0.01$. The structure represents a new structure type, which is a sum of the AlB₂ (or α -ThSi₂) and the CeGa₂Al₂ types. Coordination polyhedra of Ni ([Ni(Si₅Ce₄)], Si(1) ([Si(1)(Ce₆NiSi₂)]), and Si(2) ([Si(2)(Ce₄-Ni₄Si₄)]) are identical with the corresponding ones of the 2 compounding structures; that of Ce ([Ce(Si₁₀Ni₅Ce₆)], occurring at the contact of the 2 structures, may be realized as consisting of 2 parts each of which represents one half of the corresponding polyhedron of one of the compounding structures. Other rare-earth elements form similar compds. with structures of the same type. Lattice parameters a , b , and c are given for LnNiSi₂, where Ln is La through Lu, except for Ln = Pm.

IT 12442-41-0

(crystal structure of)

RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide (CeNiSi₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 70 (Crystallization and Crystal Structure)

IT 12442-41-0 12444-55-2 12444-62-1 12444-74-5 12500-15-1
 12502-05-5 12502-48-6 12503-32-1 12503-38-7 12503-41-2
 12503-42-3 12503-43-4 12503-44-5 12508-80-4

(crystal structure of)

L53 ANSWER 20 OF 20 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1970:71712 HCAPLUS

DOCUMENT NUMBER: 72:71712

TITLE: Cerium-nickel-silicon system in the 0-33.3 atomic % cerium range

AUTHOR(S): Bodak, O. I.; Gladyshevskii, E. I.

CORPORATE SOURCE: L'vov. Gos. Univ. im. Franko, Lvov, USSR

SOURCE: Izvestiya Akademii Nauk SSSR, Neorganicheskie Materialy (1969), 5(12), 2060-5
 CODEN: IVNMAW; ISSN: 0002-337X

DOCUMENT TYPE: Journal

LANGUAGE: Russian

ED Entered STN: 12 May 1984

AB By using x-ray phase and microstructural analyses, the phase diagram of the ternary C-Ni-Si system within the 0-33.3 atomic % Ce region was constructed. The existence of 4 previously found compds. was confirmed, and 9 new compds. were found to exist in this system. The

1st stage of the structural investigation of 6 of these compds. was completed. It was determined that one of them crystallizes in the NaZn13 type structure, two possess superstructures and belong to the BaCd11 and NaZn13 types, and the three remaining compds. belong to new structural types. Compds. with the NaZn13 and AlB2 structural types have a variable content of Ni and Si (within the limits of 10 and 9 atomic %) present. The tendency of the Si atoms in the compds. investigated towards electropos. ionization intensifies upon increased amount of Ni present. Compds. of the compns. CeX13, CeX11, and Ce2X17 (where X = Ni or Si) form isoelectronic series with compds. of the Ce-Zn and Ce-Cu-Al systems.

IT 12442-41-0

(crystal structure of)

RN 12442-41-0 HCAPLUS

CN Cerium nickel silicide (CeNiSi2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
Ce	1	7440-45-1
Si	2	7440-21-3
Ni	1	7440-02-0

CC 70 (Crystallization and Crystal Structure)

IT 12442-41-0 12442-42-1 12442-55-6 37279-90-6, Cerium
nickel silicide
(crystal structure of)

=> d his nofile

(FILE 'HOME' ENTERED AT 10:43:23 ON 13 AUG 2007)

FILE 'HCAPLUS' ENTERED AT 10:43:51 ON 13 AUG 2007

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L1      1 SEA ABB=ON  PLU=ON  US20040258993/PN
        SEL RN

FILE 'REGISTRY' ENTERED AT 10:44:10 ON 13 AUG 2007
L2      36 SEA ABB=ON  PLU=ON  (12190-79-3/BI OR 21324-40-3/BI OR
        623-53-0/BI OR 776302-88-6/BI OR 776302-89-7/BI OR
        776302-90-0/BI OR 776302-91-1/BI OR 776302-92-2/BI OR
        776302-93-3/BI OR 776302-94-4/BI OR 776302-95-5/BI OR
        776302-96-6/BI OR 776302-97-7/BI OR 776302-98-8/BI OR
        776302-99-9/BI OR 776303-00-5/BI OR 776303-01-6/BI OR
        776303-02-7/BI OR 776303-03-8/BI OR 776303-04-9/BI OR
        776303-05-0/BI OR 776303-07-2/BI OR 776303-08-3/BI OR
        776303-10-7/BI OR 776303-12-9/BI OR 776303-14-1/BI OR
        776303-16-3/BI OR 776303-18-5/BI OR 776303-19-6/BI OR
        776303-21-0/BI OR 776303-23-2/BI OR 776303-25-4/BI OR
        776303-27-6/BI OR 776303-28-7/BI OR 7782-42-5/BI OR
        96-49-1/BI)
        E CENISI2/MF
L3      1 SEA ABB=ON  PLU=ON  CENISI2/MF
L4      69943 SEA ABB=ON  PLU=ON  ((LA OR CE OR PR OR ND OR PM OR SM OR
        MG OR CA OR SR OR BA OR Y OR ZR OR HF) (L) (TI OR V OR CR OR
        MN OR FE OR CO OR NI OR CU OR ZN OR NB) (L) (P OR SI OR GE
        OR SN OR SB))/ELS(L)4-7/ELC.SUB
L5      18 SEA ABB=ON  PLU=ON  L2 AND L4
L6      5396 SEA ABB=ON  PLU=ON  ((LA OR CE OR PR OR ND OR PM OR SM OR
        MG OR CA OR SR OR BA OR Y OR ZR OR HF) (L) (TI OR V OR CR OR
        MN OR FE OR CO OR NI OR CU OR ZN OR NB) (L) (P OR SI OR GE
        OR SN OR SB))/ELS(L)3/ELC.SUB
L7      13 SEA ABB=ON  PLU=ON  L2 AND L6

FILE 'HCAPLUS' ENTERED AT 10:51:28 ON 13 AUG 2007
L8      5385 SEA ABB=ON  PLU=ON  L6
L9      1 SEA ABB=ON  PLU=ON  L1 AND L8
        E BATTERY ANODES/CT
L10     18752 SEA ABB=ON  PLU=ON  "BATTERY ANODES"+PFT,NT,OLD,NEW/CT
        E BATTERY CATHODES/CT
L11     24086 SEA ABB=ON  PLU=ON  "BATTERY CATHODES"+PFT,NT,OLD,NEW/CT
        E BATTERY ELECTROLYTES/CT
L12     9464 SEA ABB=ON  PLU=ON  "BATTERY ELECTROLYTES"+PFT,NT,OLD,NEW/C
        T
        E SECONDARY BATTERIES/CT
L13     71770 SEA ABB=ON  PLU=ON  "SECONDARY BATTERIES"+PFT,NT,OLD,NEW/CT
        E CRYSTAL STRUCTURE/CT
L14     666169 SEA ABB=ON  PLU=ON  "CRYSTAL STRUCTURE"+PFT,NT,OLD,NEW/CT
L15     133 SEA ABB=ON  PLU=ON  L8 AND (L10 OR L11 OR L12 OR L13)
L16     5 SEA ABB=ON  PLU=ON  L15 AND L14
L17     26 SEA ABB=ON  PLU=ON  L15 AND CRYSTAL?
L18     1 SEA ABB=ON  PLU=ON  L15 AND CRYSTAL AXES?
L19     24 SEA ABB=ON  PLU=ON  L3
L20     0 SEA ABB=ON  PLU=ON  L19 AND (L10 OR L11 OR L12 OR L13)
L21     0 SEA ABB=ON  PLU=ON  L19 AND (ELECTROD? OR BATTER? OR
        CATHOD? OR ANOD?)
L22     0 SEA ABB=ON  PLU=ON  L19 AND ELECTROCHEM?/SC,SX

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L23	24	SEA ABB=ON	PLU=ON	(L19 OR L20 OR L21 OR L22)
L24	1	SEA ABB=ON	PLU=ON	L23 AND LATTICE CONSTANT?
L25	0	SEA ABB=ON	PLU=ON	L23 AND CRYSTAL AXES?
L26	24	SEA ABB=ON	PLU=ON	(L23 OR L24 OR L25)
L27	1	SEA ABB=ON	PLU=ON	L15 AND LATTICE CONST?
L28	13	SEA ABB=ON	PLU=ON	L15 AND NEGATIVE ELECTROD?
L29	140	SEA ABB=ON	PLU=ON	L8 AND LATTICE CONST?
L30	0	SEA ABB=ON	PLU=ON	L29 AND CRYSTAL AXES?
L31	117	SEA ABB=ON	PLU=ON	L29 AND (L14 OR CRYSTAL STR?)
L32	2	SEA ABB=ON	PLU=ON	L31 AND ELECTROCHEM?/SC, SX
L33	78025	SEA ABB=ON	PLU=ON	L4
L34	1576	SEA ABB=ON	PLU=ON	L33 AND (L10 OR ANOD?)
L35	3	SEA ABB=ON	PLU=ON	L34 AND LATTICE CONSTANT?
L36	1	SEA ABB=ON	PLU=ON	L34 AND CRYSTAL AXES?
L37	28	SEA ABB=ON	PLU=ON	L34 AND (L14 OR CRYSTAL STR?)
L38	25	SEA ABB=ON	PLU=ON	L37 AND ELECTROCHEM?/SC, SX
L39	5	SEA ABB=ON	PLU=ON	L38 AND L8
L40	13	SEA ABB=ON	PLU=ON	L15 AND (L14 OR CRYSTAL STR?)
L41	33	SEA ABB=ON	PLU=ON	(L38 OR L39 OR L40)
L42	23	SEA ABB=ON	PLU=ON	L41 AND (1840-2003)/PRY,AY,PY
L43	31	SEA ABB=ON	PLU=ON	L16 OR L17 OR L18 OR L20 OR L21 OR L22 OR L30 OR L32 OR L35 OR L36
L44	26	SEA ABB=ON	PLU=ON	L43 AND (1840-2003)/PRY,AY,PY
L45	37	SEA ABB=ON	PLU=ON	L42 OR L44
L46	37	SEA ABB=ON	PLU=ON	L45 AND ELECTROCHEM?/SC, SX
L47	37	SEA ABB=ON	PLU=ON	L46 NOT L26
L48	11	SEA ABB=ON	PLU=ON	L28 AND (1840-2003)/PRY,AY,PY
L49	46	SEA ABB=ON	PLU=ON	L47 OR L48
L50	46	SEA ABB=ON	PLU=ON	L49 AND ELECTROCHEM?/SC, SX
L51	46	SEA ABB=ON	PLU=ON	L50 NOT L26
L52	41	SEA ABB=ON	PLU=ON	L51 AND DEV/RL
L53	20	SEA ABB=ON	PLU=ON	L26 AND (1840-2003)/PRY,AY,PY